## REMARKS

Claims 123, 132, 133, 149, 202, 203, 212, and 220-224 were pending in the application. Claims amend claims 202, 203, 212, 220, 221, 222, 223, and 224 have been amended and claims 225-235 have been added. Accordingly, claims 123, 132, 133, 149, 202, 203, 212, and 220-235 will be pending in the instant application after the amendments presented herein have been entered. For the Examiner's convenience, the claims that will be pending in the application upon entry of the instant Amendment are set forth in Appendix A.

Applicant submits herewith a "**Version with Markings to Show Changes Made**," which indicates the specific amendments made to the specification and the claims. In particular, Applicant has amended the specification to delete the pages 76-782 containing the Sequence Listing filed on January 23, 2002, and replace it with the revised Sequence Listing, filed herewith on Compact Disk (Copy 1 and Copy 2), in lieu of a paper copy. The specification has also been amended to amend the "Brief Description of the Drawings" beginning at page 2, line 24, such that each Figure corresponds to a specific SEQ ID NO. in the revised Sequence Listing.

Furthermore, because the Sequence Listing now contains all of the sequences listed in the Figures as originally filed, several of the sequence identifiers (SEQ ID NOs) have changed for some of the amino acid sequences. Accordingly, SEQ ID NO:764, which previously corresponded to Figure HPP426, is now referred to as SEQ ID NO:809. The claims have been amended to refer to the appropriate SEQ ID NO. ***The sequence contained in SEQ ID NO:809 is identical to the sequence which was originally filed as Figure HPP426.*** *No new matter has been added.*

Any amendments to and/or cancellation of the claims is not to be construed as an acquiescence to any of the rejections set forth in the instant Office Action, and was done solely to expedite prosecution of the application. Applicant hereby reserves the right to pursue the subject matter of the claims as originally filed in this or a separate application(s).

***Re-opening of Prosecution***

The Examiner has indicated that the finality of the rejection of the last Office action is herein withdrawn and prosecution of the instant application has been re-opened. Accordingly, the instant Office Action is not a Final Office Action.

***Telephone Interview Summary***

Applicant's Attorney thanks the Examiner for the telephone interview which was conducted on March 28, 2002.

The Examiner has summarized the Interview as follows:

> Prior to discussion of any claim amendments submitted After Final, the examiner pointed out a discrepancy between the originally filed Figure "HPP426" which provides original descriptive support for SEQ ID No 746 and the Sequences submitted in the Computer Readable Form (CRF), date of entry into STIC/USPTO data base being March 25, 1997. Original Figure "HPP426" shows an amino acid sequence of 148 amino acids which starts with "Met" and ends with "Cys" (see attachment page, filed 1995). The sequence listing page for SEQ ID NO 746, the sequence searched using the CRF submitted by Applicant and examined in the Office Actions, shows an amino acid sequence of 170 (1997), rather that an amino acid sequence of 148 as originally submitted (1995). Additional changes in the amino acid sequence are evident in the sequence listing page (1997) that are not supported by original Figure HPP426 (1995). "Xaa" designators have been inserted in positions 3-4 and 146 and the specific amino acids originally submitted deleted. The last amino acid "Cys" of position 148 of HPP426 is not present in the Sequence listing page, but has been substituted with "Leu". Based upon the discrepancies between the originally filed figure HPP426, the SEQUENCE LISTING PAGES, and the CRF submitted, the examiner stated that prosecution would be re-opened and a New Matter Rejection would be made of record. The Amendment After Final would be entered upon Re-opening of prosecution and a Non-Final Office Action made of record. Prosecution is being re-opened in light of a lack of original descriptive support for the sequence(s) shown in the SEQUENCE LISTING PAGES and CRF.

***Response to Amendment***

With respect to the Declaration of Dr. Peter C. Doig under 37 CFR §1.132, which was filed March 4, 2002, the Examiner is of the opinion that the Declaration is

> insufficient to overcome the rejection of claims 123, 132-133, 149, 220-224 based upon 35 U.S.C. 101, and 35 U.S.C. 112, first paragraph as set forth in the last Office action because: Dr. Doig discusses a polypeptide that does not evidence original descriptive support in the instant Application. Dr. Doig refers to amino acids 24 through 155 of SEQ ID No 764, but SEQ ID NO 764 (original) only contains 148 amino acids. The evidence and arguments provided in the Declaration are not commensurate in scope with the claimed invention which evidences original descriptive support in the Instant Application. No specific epitopes are disclosed. The specific function of SEQ ID NO 764 was not described to be HopE in the instant Application. The polypeptide discussed by Dr. Doig is a different molecule from that originally disclosed in the instant Application.

Applicant respectfully requests that the Declaration of Declaration of Dr. Peter C. Doig under 37 CFR §1.132 (the Declaration), filed on March 4, 2002, be considered. The polypeptide which is discussed in the Declaration, referred to therein as HopE, is identical to SEQ ID NO:809 at amino acids 24 through 146 (as evidenced by the alignment provided

rmore, contrary to the Examiner's assertions, Applicant

aration discloses 15 epitopes, including five epitopes of

and 4 of the Declaration. Furthermore, the specific

SEQ ID NO:809 (except for the epitopes numbered 13,

ix D, submitted herewith. Accordingly, Applicant has

h as filed on March 4, 2002 with the previous

pectfully requests consideration by the Examiner

sclosed in the Declaration which are present in SEQ ID



***Defective Appeal Brief***

Applicant notes the Examiner's statement that "[t]he brief does not contain a statement of the status of all the claims, pending or canceled, and identify the claims appealed as required by 37 CFR

1.192(c)(3). The claims recited in the Appeal Brief and Arguments directed to the rejections made of record are directed to a molecule of 170 amino acids in length that does not evidence original descriptive support in the instant Application. Based upon this fact, the Appeal Brief submitted March 12, 2002, is defective."

***Request for An Oral Hearing***

Applicant notes the Examiner's statement that "[i]n light of prosecution having been re-opened, the instant Application is no longer on Appeal. Applicant's request for an Oral Hearing by the Board of Appeals is deferred and should be resubmitted at such time if and when the instant Application is on Appeal again. The status of the instantly claimed invention is now in "Non-Final Status," in light of the examiner re-opening prosecution, in order to make of record new grounds of rejection, at least under 35 U.S.C. 112, first paragraph, New Matter."

***Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures***

With regard to the Sequence Listing filed on January 23, 1997, the Examiner has stated that

> This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 C.F.R. § 1.821(a)(l) and (a)(2). However, this application fails to comply with the requirements of 37 C.F.R. §§ 1.821-1.825 for the reason(s) set forth on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures. APPLICANT IS GIVEN the time period set for THIS LETTER WITHIN WHICH TO COMPLY WITH THE SEQUENCE RULES, 37 C.R.F. §§ 1.821-1.825.

In response to the Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures, Applicant submits herewith a revised Sequence Listing (contained on a Compact Disk (Copy 1 and Copy 2, in lieu of a paper copy)) to replace the Sequence Listing filed on January 23, 1997. Applicant has also amended the specification

to delete the Sequence Listing contained on pages 76-782, filed on January 23, 1997, and replace it with the revised Sequence Listing filed herewith. Furthermore, Applicant submits concurrently herewith to Box Sequence Listing a Compact Disk containing substitute computer readable form (CRF) of the Sequence Listing for the above-referenced patent application, and a separate transmittal letter for the Compact Disk.

***Specification***

The Examiner has stated that "[t]he disclosure is objected to because of the following informalities: The figures and the sequence pages do not correspond one to the other. The lack of agreement between the sequence listing and the figures introduces confusion into the disclosure."

Applicant respectfully submits that the previously filed Sequence Listing (filed on January 23, 1997) has been deleted and a revised Sequence Listing is filed herewith. The revised Sequence Listing contains all of the sequences contained in the figures, which were filed with the application on the original filing date of June 7, 1995. Therefore, the figures and the revised Sequence Listing correspond to each other. Because all of the sequences included in the figures are now included in the revised Sequence Listing, some of the sequence identifiers have changed. For example, the sequence previously referred to as SEQ ID NO:764 is now referred to as SEQ ID NO:809. The specification has been amended to reflect these changes. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the foregoing objection to the specification. *No new matter has been added.*

***Rejection of Claims 123, 132-133, 149, 202-203, 212 and 220-224 Under 35 U.S.C. § 112, First Paragraph***

The Examiner has rejected claims 123, 132-133, 149, 202-203, 212 and 220-224 under 35 U.S.C. 112, first paragraph, as "containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the

application was filed, had possession of the claimed invention." In particular, the Examiner is of the opinion that

> All of the claims recite SEQ ID No 764, which is defined by the computer readable form (CRF) and Sequence listing pages (now a part of the instant Specification) that show an amino acid sequence of 170 amino acids. Original figure HPP426 which was given the designator SEQ ID No 764 as well, only shows an amino acid sequence of 148 amino acids. All pending claims recite SEQ ID NO 764 which contains at least 32 additional amino acids that do not evidence original descriptive support in the instant specification. Other changes were made to the CRF and Sequence listing pages through introduction of Xaa amino acids at positions 3-4 and 146 and the original amino acids deleted. The last amino acid "Cys" of position 148 of HPP426 is not present in the Sequence listing page of the CRF submitted in 1997, but shows "Leu" at position 148.

Applicant respectfully submits that, as stated above, the previously filed Sequence Listing (filed on January 23, 1997) has been deleted and a revised Sequence Listing is filed herewith. The revised Sequence Listing, filed herewith, contains all of the sequences contained in the figures, which were filed with the application on the original filing date of June 7, 1995. Accordingly, the revised Sequence Listing contains 941 sequences which directly correspond to the originally filed figures. Because all of the sequences included in the figures are now included in the revised Sequence Listing, some of the sequence identifiers have changed. For example, the sequence previously referred to as SEQ ID NO:764 is now referred to as SEQ ID NO:809. SEQ ID NO:809 corresponds exactly to Figure HPP426 as filed on June 7, 1995. Accordingly, based on the submission of the revised Sequence Listing and the amendment to the instant specification, Applicant respectfully requests withdrawal of the foregoing rejection.

***Rejection of Claims 123 and 202-203 Under 35 U.S.C. § 112, Second Paragraph***

The Examiner has rejected claims 123 and 202-203 under 35 U.S.C. 112, second paragraph, "as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." In particular, the Examiner is of the opinion that

> [c]laim 132 recites the phrase "a polypeptide of any one of claims 202-203 and an additional amino acid sequence." In light of the fact that the amino acid sequence of the claimed polypeptide of claims 202 and 203 is not limited to an amino acid sequence that encodes an epitope or antigenic determinant, what is the fusion polypeptide now claimed? What amino acids have been fused with the polypeptide amino acids sequence of either claim 202 or 203? What the fusion protein is, is not clear in light of the polypeptide of claims 202-203 not being specifically defined by any over all structure and function and the additional amino acid sequence is not provided either.
> Claim 202 recites the phrase "at least one epitope recognized by a T-cell receptor'specific for the polypeptide set forth in SEQ ID NO 764." What is the epitope that is recognized by a T cell receptor? What is the polypeptide sequence that comprises the T-cell receptor epitope? How large is the polypeptide? What is the over all structure, sequence and function of the claimed polypeptide, especially in light of the evidence made of record showing sequence homology between Hemophilus, Helicobacter and Trichoderma longibrachiatum? Claim 203 recites the phrase "at least antigenic determinant of the polypeptide set forth in SEQ ID NO 764." What is the antigenic determinant that a part of the claimed polypeptide? What is the polypeptide sequence that comprises the antigenic determinant? How large is the polypeptide? What is the over all structure, sequence and function of the claimed polypeptide, especially in light of the evidence made of record showing sequence homology between Hemophilus, Helicobacter and Trichoderma longibrachiatum and that could share antigenic determinants? Claims 123, 132-133, 149, 212, and 220-224 are unclear because they depend from either claims 202 or 203.

Applicant respectfully traverses the foregoing rejection on the grounds that the pending claims particularly point out and distinctly claim the subject matter which Applicant regards as his invention, as required by 35 U.S.C. § 112, second paragraph. With respect to claim 202, the epitope that is recognized by a T cell receptor comprises at least 10 consecutive amino acids of SEQ ID NO:809. The polypeptide sequence that comprises the T-cell receptor epitope is an amino acid sequence comprising at least 10 consecutive amino acid residues of SEQ ID NO:809. With respect to claim 203, the claimed polypeptide must comprise at least one antigenic determinant of the polypeptide set forth in SEQ ID NO:809. Accordingly, the structural and functional characteristics of the claimed

polypeptides are sufficiently clear definite such that one of skill in the art would recognize the subject matter which Applicant regards as the invention.

The Examiner states that "the amino acid sequence of the claimed polypeptide of claims 202 and 203 is not limited to an amino acid sequence that encodes an epitope or antigenic determinant." Applicant respectfully submits that the claimed amino acid sequences clearly must comprise at least one epitope recognized by a T cell receptor or at least one antigenic determinant. The fact that the claimed amino acid sequences may also comprise additional amino acid sequence does not render the claims indefinite based on the fact that the claimed polypeptides are functionally defined. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the foregoing rejection.

***Rejection of Claims 123, 132-133, 149, 202-203, 212 and 220-224 Under 35 U.S.C. §101 and 35 U.S.C. §112, First Paragraph***

The Examiner has rejected claims 123, 132-133, 149, 202-203, 212 and 220-224 under 35 U.S.C. 101 and 35 U.S.C. 112, first paragraph, because "the claimed invention is not supported by either a specific and substantial, a credible asserted utility or a well established utility as previously applied to claims 113-120, 123-125, 127-135, 149-150,196-213 and 214-224." In particular, the Examiner is of the opinion that

> While a SEQ ID NO provides insight into the overall molecular structure, and the physical characteristics of the individual components, the SEQ ID NO does not define biological activity of the three dimensional polypeptide molecule in the native context. The biological activity of SEQ ID NO 764 has not been described in the instant Specification. The cited references, Doig et al (1995) and Bains et al (2000), supplied by Applicant, compare SEQ ID NO 764 to the protein of Bains et al, which has been 'shown to be antigenic in vivo with both patient sera and specific monoclonal antibodies'. It is clear to the examiner that the antigen of Bains induces antibodies, these antibodies are present in patients that are still sick. The antibodies induced in vivo are not protective antibodies because infection persists. The protein of Bains has 250 amino acids and functions as a porin. The claimed polypeptide of SEQ ID No 740 [*sic*] only has 148 amino acids and no credible asserted specific utility in light of evidence of sequence homology with two other pathogens, Hemophilus and Trichoderma longibrachiatum....The polypeptide of the

> invention is argued to be immunogenic and could induce antibodies which in turn could be used to identify the polypeptide, how circular reasoning defines a substantial, credible or well established utility has not been established. Applicant urges, due to homology between P2 protein and the claimed polypeptides of SEQ ID NO 764, the polypeptides of SEQ ID NO 764 would have shared characteristics, and biological activity and thus would have diagnostic and vaccine utility...It is the position of the examiner that the disease conditions caused by H.pylori and Hemophilus influenza are very different. The virulence factors associated with each of these pathogens also differ. The regions of the body that each pathogen infects and causes disease are not the same.
>
> Comparison of SEQ ID NO 764 with Hemophilus influenza P2 porin, does not define SEQ ID No 764 as having the same biological characteristics as the claimed polypeptides....Comparisons made based upon sequence alignment of SEQ ID NO 764 with microbial proteins known in the art does not define the biological activity of SEQ ID NO 764 as that of the proteins that have shared homology. The sequence alignments show homology between three very different proteins of different lengths and different functionalities. The cellulase of Ward shows that greatest over all sequence similarity relative to the size of the full length polypeptide. Polypeptides that comprises 10 amino acids or more of SEQ ID NO 764 would not have a specific utility based upon shared sequence homology/cross-reactivity with other known pathogens, Hemophilus and Trichoderma.

Applicant respectfully traverses the foregoing rejection. Claim 202 is drawn to an isolated polypeptide comprising at least 10 consecutive amino acid residues of SEQ ID NO: 809, wherein said polypeptide comprises at least one epitope recognized by a T cell receptor specific for the polypeptide set forth in SEQ ID NO:764. Claim 203 is directed to an isolated polypeptide comprising at least 10 consecutive amino acid residues of SEQ ID NO: 809, wherein said polypeptide comprises at least one antigenic determinant of the polypeptide set forth in SEQ ID NO: 809. Claim 123 is directed to an isolated polypeptide of any one of claims 202-203 which is a recombinant polypeptide. Claim 132 is directed to a fusion protein comprising a polypeptide of any one of claims 202-203 and an additional amino acid sequence. Claim 133 is directed to a fusion protein of claim 132, wherein the additional amino acid sequence comprises an *H. pylori* polypeptide. Claim 149 is directed to a composition comprising a polypeptide of any one of claims 202-203 and a pharmaceutically acceptable carrier. Claim 212 is directed to a composition comprising a fusion protein of claim 132 and a pharmaceutically acceptable carrier. Claims 220, 221, 222, 223, and 224 are directed to an isolated polypeptide of any one of claims

202-203 comprising at least about 12, 16, 20, 50, or 100 consecutive amino acid residues of SEQ ID NO: 809, respectively.

New claim 225 is drawn to an isolated polypeptide consisting of at least 10 consecutive amino acid residues of SEQ ID NO: 809, wherein said polypeptide comprises at least one epitope recognized by a T cell receptor specific for the polypeptide set forth in SEQ ID NO:764. Claim 226 is directed to an isolated polypeptide consisting of at least 10 consecutive amino acid residues of SEQ ID NO: 809, wherein said polypeptide comprises at least one antigenic determinant of the polypeptide set forth in SEQ ID NO: 809. New claim 227 is directed to isolated polypeptides of any one of claims 225-226 which is a recombinant polypeptide. New claim 228 is directed to fusion proteins comprising a polypeptide of any one of claims 225-226 and an additional amino acid sequence. New claim 229 is directed to fusion proteins of claim 229, wherein the additional amino acid sequence comprises an *H. pylori* polypeptide. New claim 230 is directed to compositions comprising a polypeptide of any one of claims 225-226 and a pharmaceutically acceptable carrier. New claim 231 is directed to compositions comprising a fusion protein of claim 228 and a pharmaceutically acceptable carrier.

New claim 232 is directed to isolated polypeptides comprising at least 10 consecutive amino acid residues of SEQ ID NO: 809 and no more than 148 amino acid residues of SEQ ID NO:809, wherein said polypeptide comprises at least one epitope recognized by a T cell receptor specific for the polypeptide set forth in SEQ ID NO:809. New claim 233 is directed to isolated polypeptides comprising at least 10 consecutive amino acid residues of SEQ ID NO: 809 and no more than 148 amino acid residues of SEQ ID NO:809, wherein said polypeptide comprises at least one antigenic determinant of the polypeptide set forth in SEQ ID NO: 809.

The present invention features a novel surface protein from the bacteria *Helicobacter pylori*. Applicant has described the chemical, physical, and biological properties of the polypeptide set forth as SEQ ID NO:809 (previously referred to as SEQ ID NO:764). Applicant asserts that the polypeptides of the invention ***can be used for diagnostic and therapeutic purposes with regard to H. pylori infection; for generating antibodies; and to evaluate compounds useful as activators or inhibitors of the bacterial life cycle*** (see, for example, the specification at page 50). Applicant maintains that the proposed utilities are specific and substantial utilities and are also credible, and thus satisfy the requirements of 35 U.S.C. §101.

As the Examiner is aware, "an applicant need only make one credible assertion of specific utility for the claimed invention to satisfy §101 and §112." *Utility Guidelines,* page 15. A credible utility is assessed by ascertaining "whether the assertion of utility is believable to a person of ordinary skill in the art based on the totality of the evidence and reasoning provided." *Utility Guidelines,* page 17.

The specificity of the asserted utilities is based on the fact that the polypeptide set forth as SEQ ID NO:809 is a surface protein of the *H. pylori* pathogen, and, as such, is an attractive target for intervention. The significant pathologies attributed to *H. pylori* infection (*e.g.*, gastritis, peptic ulceration, gastric cancer) have made effective diagnosis, treatment and prevention desirable. Accordingly, Applicant asserts that the claimed polypeptides possess a specific and credible utility, as all polypeptides are not capable of utility for diagnostics and therapeutics for *H. pylori.*

As further evidence of the asserted utilities as set forth above, Applicant submits herewith, as Appendix B, a copy of the Declaration of Dr. Peter C. Doig Pursuant to 37 C.F.R. §1.132 (hereinafter "the Declaration") as filed with the previous Amendment and Response, dated March 4, 2002. The Declaration presents the results of experiments that ***corroborate the asserted utilities of the claimed invention as were originally disclosed in the instant application.***

An applicant can rebut an Examiner's rejection under 35 U.S.C. §101 using any one of the following: amendments to the claims, arguments or reasoning, ***or new evidence submitted in a Declaration under 37 C.F.R. §1.132,*** or in a printed publication (*see* page 18 of the *Utility Guidelines*).

The Declaration describes experiments which confirm that the claimed polypeptides, *e.g.*, SEQ ID NO: 764 (now referred to as SEQ ID NO:809) and fragments of at least 10 amino acids, have the ability to induce an immune response. The Declaration, at page 2, refers to the HopE polypeptide and states that HopE is identical to SEQ ID NO:764 of the instant application at amino acid residues 24-155. Applicant respectfully submits that SEQ ID NO:764 has been amended to correspond to Figure HPP426, and is now referred to as SEQ ID NO:809. SEQ ID NO:809 is identical to the sequence disclosed in Figure HPP426. SEQ ID NO:809 is identical to

HopE at amino acid residues 24-146, as evidenced by the alignment submitted herewith as Appendix C.

As set forth in the Declaration, monoclonal antibodies were produced using recombinant his-tagged HopE (full length mature sequence –11 C-terminal amino acids). Peptides were synthesized as 10-mers with an 8-amino acid overlap, with the first peptide starting at the glutamic acid residue of the mature, process protein and ELISA was performed. Mimitope analysis was able to map the epitopes of all monoclonal antibodies examined. The primary peptides that reacted with either monoclonal or polyclonal sera are shown in Table 1 of the Declaration. These peptides, except for epitopes 13, 14, and 15, are present within the amino acid sequence of SEQ ID NO:809 as described in the specification, as illustrated by the amino acid sequence of SEQ ID NO: 809 shown as Appendix D, attached hereto. The location of each epitope is identified by bold, or italicized font, underlining, or double underlining within the sequence of SEQ ID NO: 809.

Contrary to the Examiner's assertion that it is "circular reasoning" to say that the claimed polypeptides induce antibodies which in turn could be used to identify the polypeptide, Applicant respectfully submits that the immunogenicity of the claimed polypeptides, as evidenced by the results of the experiments set forth in the Declaration, supports the asserted utility of SEQ ID NO:809, and fragments thereof, as having utility as diagnostics and therapeutics with regard to *H. pylori* infection.

The Examiner is further of the opinion that

> [u]pon consideration of the arguments and the references submitted by Applicant, the examiner believes that evidence has been made of record that defines portions of SEQ ID NO 764 to evidence antigenic cross reactivity with the P2 porin of Hemophilus pathogen. ***The existence of cross reactive epitopes would induce cross reactive antibodies which would result in a false positive diagnostic result. Therefore, Applicant has made of record arguments and evidence that polypeptides of SEQ ID No 764 would not serve as a diagnostic polypeptide for H.pylori infection due to the existence of conserved portions of SEQ ID NO 764 being shared with H.influenzae, both are human pathogens.***
> With respect to arguments made regarding evidence to show that SEQ ID No 764 is not a vaccine antigen, the examiner would like to point out the fact that

> Rappouli et al (1993) and HP World Wide (1991) documents have previously been made of record which show that H.pylori vaccines are in the developmental stages and are not predictable. HP World Wide cites Dunkley and Heap that found H.pylori compositions did not induce protective immunity. No showing has been made of record that indicates that the conserved portions of the H. influenza P2 porin are those portions responsible for the induction of protective immune response against H. influenza, and that these conserved portions would also induce a protective immune response against Helicobacter pylori as well. Therefore, arguments that H. influenza P2 protein and Helicobacter polypeptide SEQ ID No 764 are both protective antigens are not convincing. [Emphasis added].

Applicant respectfully submits that Heap, Dunkley, and Monath do not teach that the administration of *H. pylori* antigens provide no protection. To the contrary, they claim that only gastrointestinal routes may not be effective for stimulation of protective immune response.

Moreover, with respect to the use of the polypeptides of the instant invention as a diagnostic, Applicant respectfully submits that the references submitted by Applicant (Doig *et al.* (1995) *J. Bacteriology 177:5447*, and Bains *et al.* (2000) *J. Bacteriology* 182:2370) and arguments presented in the response to the previous Office Action (Paper No. 29), ***do not*** define "portions of SEQ ID NO 764 [809] to evidence antigenic cross reactivity with the P2 porin of Haemophilus pathogen" as stated by the Examiner. Applicant reiterates the comments set forth in the response to a previous Office Action (Paper No. 29) as follows:

> each of these publications describes members of the HOP family of molecules, bacterial porin proteins which are know[n] to share chemical, physical and biological properties....a member of this family, HopE (to which SEQ ID NO:764 corresponds substantially), has been shown to be antigenic *in vivo* as assessed by sera taken from *H. pylori*-infected individuals, and is immunologically conserved with both patient sera and specific monoclonal antibodies.

As set forth above, HopE and SEQ ID NO:809 are identical over amino acids 24 through 146 of SEQ ID NO:809 (see Appendix A, attached hereto).

Moreover, in a previous response, Applicant made the statement that "porins, including the P2 porin of *H. influenzae*, have been used as immunogens that are actively and/or passively protective in subsequent challenge experiments" to illustrate that porins have been used as protective immunogens.

As stated by the Examiner, "comparison of SEQ ID NO 764 with Haemophilus influenzae porin protein P2 (U.S. Pat. 6,153,406) shows SEQ ID NO 764 (170 amino acids) shares **43 amino acids** with SEQ ID NO 10 (342 amino acids)." ***However, Applicant respectfully submits that porin P2 and SEQ ID NO:764 do not share more than 2 consecutive amino acids.*** Moreover, ***monoclonal antibodies*** have been identified which are ***specific to SEQ ID NO:764***. It is Applicant's position that the Examiner has not provided evidence of the existence of cross reactive epitopes which would induce cross reactive antibodies resulting in a false positive diagnostic result.

As the Examiner is aware, the Applicant does not have to provide evidence sufficient to establish that an asserted utility is true "beyond reasonable doubt." *In re Irons*, 340 F.2d 974, 978, 144 USPQ 351, 354 (CCPA 1965). Instead, evidence will be sufficient, if considered as a whole, it leads a person of ordinary skill in the art to conclude that the asserted utility is more likely than not true. M.P.E.P. §2164.07. In view of all the foregoing, it is evident that Applicant's invention has a *specific, substantial, and credible utility* that would have been readily apparent to one of skill in the art. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the foregoing 35 U.S.C. §101 and §112, first paragraph rejections.

***Rejection of Claims 123, 132-133, 149, 202-203, 212 and 220-224 Under 35 U.S.C. §112, First Paragraph***

The Examiner has rejected claims 123, 132-133, 149, 202-203, 212 and 220-224 under 35 U.S.C. 112, first paragraph, as "containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention for reasons of record on paper number 26."

In particular, the Examiner is of the opinion that

> while the instant specification suggests polypeptides of the recited structural components held in common with SEQ ID NO 764, no structural polypeptides of the same functional characteristics of SEQ ID NO 764 have been described. The examiner has made a lack of written description for the claimed genus of polypeptides. As discussed above, the only physical characteristic disclosed is the amino acid sequence, the only structural characteristic disclosed is the amino acid sequence and the only chemical characteristic disclosed is that presented by the amino acid sequence. Only the SEQ ID NO is disclosed to describe the invention. A representative number of polypeptides that differ from SEQ ID No 764, and that would also evidence the same or equivalent biological function do not evidence original descriptive support.....applicants have not disclosed any information which is 3' and 5' to the polynucleotide sequence of SEQ ID NO:764 and therefore clearly lacks written description for the broad class of polynucleotides encoding SEQ ID NO:764. In the instant case, the specification provides only written description for a polypeptide that is encoded by a polynucleotide consisting of SEQ ID NO:764. No variant polypeptides have been described in such a way to reasonably convey to one skilled in the relevant art that Applicant had possession of the claimed invention. Helicobacter polypeptides (proteins) that are larger than 148 amino acids and comprise SEQ ID NO 764 lack original descriptive support in the instant specification.

Furthermore, the Examiner is of the opinion that

> A single disclosed species does not provide original descriptive support and show possession for the now claimed genus of polypeptides as now claimed in claims 123,132-133, 149, 202-203, 212 and 220-224. With respect to the claimed polypeptides of claims , it is the position of the examiner that the claim is described for Helicobacter polypeptides up to 148 amino acids that are encoded by SEQ ID No 764. Helicobacter polypeptides larger that 148 amino acids and comprise SEQ ID NO 764 do not evidence original descriptive support. As no upper limit is recited in the claim, Helicobacter pylori polypeptides greater than 170 amino acids are encompassed by the claim language which do not meet the requirement for written description.

Applicant respectfully traverses the foregoing rejection. Applicant respectfully submits that there is sufficient written description in the instant specification to inform a skilled artisan that Applicant was in possession of the claimed invention at the time of filing, as required by U.S.C. §112, first paragraph (see M.P.E.P. 2163.02). "Written description may be satisfied through disclosure of relevant identifying characteristics, *i.e.*, structure, other physical and/or chemical characteristics, functional characteristics when coupled with a known or disclosed

correlation between function and structure, or some combination of such characteristics." *Interim Guidelines for Examination of Patent Applications Under the 35 U.S.C. §112, First Paragraph Written Description Requirement.* Moreover, "[a] specification may, within the meaning of 35 U.S.C., § 112, First Paragraph, contain a written description of a broadly written claimed invention without describing all species that claim encompasses." *Utter v. Hiraga*, 845 F.2d 993, 6 USPQ2d 1709 (Fed. Cir. 1988). For at least the reasons discussed below, the instant specification satisfies this requirement for the claimed invention.

Applicant respectfully submits that the polypeptides of claims 202 and 203 are limited to those polypeptides which have the same identifying characteristics, *e.g.*, functional and structural characteristics. Claim 202 is directed to isolated polypeptides comprising at least 10 consecutive amino acid residues of SEQ ID NO:809, ***wherein said polypeptide comprises at least one epitope recognized by a T cell receptor specific for the polypeptide set forth in SEQ ID NO:809***. Claim 203 is directed to isolated polypeptides comprising at least 10 consecutive amino acid residues of SEQ ID NO:809, ***wherein said polypeptide comprises at least one antigenic determinant of the polypeptide set forth in SEQ ID NO:809***. The amino acid sequence is not the only structural characteristic required by the claim. Functional characteristics of the claimed polypeptides, *e.g.*, the ability of the polypeptide to be recognized by a T cell receptor, are also disclosed. Accordingly, the claimed invention is not solely determined by the sequence of the claimed amino acid as stated by the Examiner. Accordingly, in light of the comments set forth above, Applicant respectfully requests reconsideration and withdrawal of the foregoing rejection.

## CONCLUSION

In view of the foregoing amendments and remarks, reconsideration of the rejections and allowance of all pending claims are respectfully requested. If a telephone conversation with Applicant's Attorney would expedite prosecution of the above-identified application, the Examiner is urged to call the undersigned at (617) 227-7400.

Respectfully submitted,

Lisa M. DiRocco

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Dated: **November 3, 2002**

## VERSION WITH MARKINGS TO SHOW CHANGES MADE

***In the Specification:***

Please amend the specification to delete pages 76-782 containing the Sequence Listing filed on January 23, 1997, and replace the Sequence Listing with the revised Sequence Listing, filed herewith.

Please delete the "Brief Description of the Drawings" beginning at page 2, line 24, and replace it with the following re-written "Brief Description of the Drawings":

**--Brief Description of the Drawings**

Figures 1A and 1B contain the amino acid sequence of *H. pylori* polypeptide HPP1 (1A) (SEQ ID NO:384) and the nucleic acid sequence HPP1B (1B) (SEQ ID NO:1) which encodes HPP1;

Figure 2A contains the amino acid sequence of *H. pylori* polypeptide HPP2 (2A) (SEQ ID NO:385);

Figure 3A contains the amino acid sequence of *H. pylori* polypeptide HPP3 (3A) (SEQ ID NO:386);

Figure 4A contains the amino acid sequence of *H. pylori* polypeptide HPP4 (4A) (SEQ ID NO:387);

Figures 5A and 2B contain the amino acid sequence of *H. pylori* polypeptide HPP5 (5A) (SEQ ID NO:388) and the nucleic acid sequence HPP5B (2B) (SEQ ID NO:2)which encodes HPP5;

Figures 6A and 3B contain the amino acid sequence of *H. pylori* polypeptide HPP6 (6A) (SEQ ID NO:389) and the nucleic acid sequence HPP6B (3B) (SEQ ID NO:3) which encodes HPP6;

Figures 7A and 4B contain the amino acid sequence of *H. pylori* polypeptide HPP7 (7A) (SEQ ID NO:390) and the nucleic acid sequence HPP7B (4B) (SEQ ID NO:4) which encodes HPP7;

Figures 8A and 5B contain the amino acid sequence of *H. pylori* polypeptide HPP8 (8A) (SEQ ID NO:391) and the nucleic acid sequence HPP8B (5B) (SEQ ID NO:5) which encodes HPP8;

Figure 9A contains the amino acid sequence of *H. pylori* polypeptide HPP9 (9A) (SEQ ID NO:392);

Figures 10A and 6B contain the amino acid sequence of *H. pylori* polypeptide HPP10 (10A) (SEQ ID NO:393) and the nucleic acid sequence HPP10B (6B) (SEQ ID NO:6) which encodes HPP10;

Figures 11A and 7B contain the amino acid sequence of *H. pylori* polypeptide HPP11 (11A) (SEQ ID NO:394) and the nucleic acid sequence HPP11B (7B) (SEQ ID NO:7) which encodes HPP1;

Figures 12A and 8B contain the amino acid sequence of *H. pylori* polypeptide HPP12 (12A) (SEQ ID NO:395) and the nucleic acid sequence HPP12B (8B) (SEQ ID NO:8) which encodes HPP12;

Figures 13A and 9B contain the amino acid sequence of *H. pylori* polypeptide HPP13 (13A) (SEQ ID NO:396) and the nucleic acid sequence HPP13B (9B) (SEQ ID NO:9) which encodes HPP13;

Figures 14A and 10B contain the amino acid sequence of *H. pylori* polypeptide HPP14 (14A) (SEQ ID NO:397) and the nucleic acid sequence HPP14B (10B) (SEQ ID NO:10) which encodes HPP14;

Figures 15A and 11B contain the amino acid sequence of *H. pylori* polypeptide HPP15 (15A) (SEQ ID NO:398) and the nucleic acid sequence HPP15B (11B) (SEQ ID NO:11) which encodes HPP15;

Figures 16A and 12B contain the amino acid sequence of *H. pylori* polypeptide HPP16 (16A) (SEQ ID NO:399) and the nucleic acid sequence HPP16B (12B) (SEQ ID NO:12) which encodes HPP16;

Figures 17A and 13B contain the amino acid sequence of *H. pylori* polypeptide HPP17 (17A) (SEQ ID NO:400) and the nucleic acid sequence HPP17B (13B) (SEQ ID NO:13) which encodes HPP17;

Figures 18A and 14B contain the amino acid sequence of *H. pylori* polypeptide HPP18 (18A) (SEQ ID NO:401) and the nucleic acid sequence HPP18B (14B) (SEQ ID NO:14) which encodes HPP18;

Figures 19A and 15B contain the amino acid sequence of *H. pylori* polypeptide HPP19 (19A) (SEQ ID NO:402) and the nucleic acid sequence HPP19B (15B) (SEQ ID NO:15) which encodes HPP19;

Figure 20A contains the amino acid sequence of *H. pylori* polypeptide HPP20 (20A) (SEQ ID NO:403);

Figures 21A and 16B contain the amino acid sequence of *H. pylori* polypeptide HPP21 (21A) (SEQ ID NO:404) and the nucleic acid sequence HPP21B (16B) (SEQ ID NO:16) which encodes HPP21;

Figures 22A and 17B contain the amino acid sequence of *H. pylori* polypeptide HPP22 (22A) (SEQ ID NO:405) and the nucleic acid sequence HPP22B (17B) (SEQ ID NO:17) which encodes HPP22;

Figures 23A and 18B contain the amino acid sequence of *H. pylori* polypeptide HPP23 (23A) (SEQ ID NO:406) and the nucleic acid sequence HPP23B (18B) (SEQ ID NO:18) which encodes HPP23;

Figures 24A and 19B contain the amino acid sequence of *H. pylori* polypeptide HPP24 (24A) (SEQ ID NO:407) and the nucleic acid sequence HPP24B (19B) (SEQ ID NO:19) which encodes HPP24;

Figures 25A and 20B contain the amino acid sequence of *H. pylori* polypeptide HPP25 (25A) (SEQ ID NO:408) and the nucleic acid sequence HPP25B (20B) (SEQ ID NO:20) which encodes HPP25;

Figure 26A contains the amino acid sequence of *H. pylori* polypeptide HPP26 (26A) (SEQ ID NO:409);

Figures 27A and 21B contain the amino acid sequence of *H. pylori* polypeptide HPP27 (27A) (SEQ ID NO:410) and the nucleic acid sequence HPP30B (21B) (SEQ ID NO:21) which encodes HPP27;

Figure 28A contains the amino acid sequence of *H. pylori* polypeptide HPP28 (28A) (SEQ ID NO:411);

Figure 29A contains the amino acid sequence of *H. pylori* polypeptide HPP29 (29A) (SEQ ID NO:412);

Figures 30A and 22B contain the amino acid sequence of *H. pylori* polypeptide HPP30 (30A) (SEQ ID NO:413) and the nucleic acid sequence HPP30B (22B) (SEQ ID NO:22) which encodes HPP30;

Figures 31A and 23B contain the amino acid sequence of *H. pylori* polypeptide HPP31 (31A) (SEQ ID NO:414) and the nucleic acid sequence HPP31B (23B) (SEQ ID NO:23) which encodes HPP31;

Figure 32A contains the amino acid sequence of *H. pylori* polypeptide HPP32 (32A) (SEQ ID NO:415);

Figure 33A contains the amino acid sequence of *H. pylori* polypeptide HPP33 (33A) (SEQ ID NO:416);

Figure 34A contains the amino acid sequence of *H. pylori* polypeptide HPP34 (34A) (SEQ ID NO:417);

Figure 35A contains the amino acid sequence of *H. pylori* polypeptide HPP35 (35A) (SEQ ID NO:418);

Figures 36A and 24B contain the amino acid sequence of *H. pylori* polypeptide HPP36 (36A) (SEQ ID NO:419) and the nucleic acid sequence HPP36B (24B) (SEQ ID NO:24) which encodes HPP36;

Figures 37A and 25B contain the amino acid sequence of *H. pylori* polypeptide HPP37 (37A) (SEQ ID NO:420) and the nucleic acid sequence HPP37B (25B) (SEQ ID NO:25) which encodes HPP37;

Figures 38A and 26B contain the amino acid sequence of *H. pylori* polypeptide HPP38 (38A) (SEQ ID NO:421) and the nucleic acid sequence HPP38B (26B) (SEQ ID NO:26) which encodes HPP38;

Figures 39A and 27B contain the amino acid sequence of *H. pylori* polypeptide HPP39 (39A) (SEQ ID NO:422) and the nucleic acid sequence HPP39B (27B) (SEQ ID NO:27) which encodes HPP39;

Figures 40A and 28B contain the amino acid sequence of *H. pylori* polypeptide HPP40 (40A) (SEQ ID NO:423) and the nucleic acid sequence HPP40B (28B) (SEQ ID NO:28) which encodes HPP40;

Figure 41A contains the amino acid sequence of *H. pylori* polypeptide HPP41 (41A) (SEQ ID NO:424);

Figures 42A and 29B contain the amino acid sequence of *H. pylori* polypeptide HPP42 (42A) (SEQ ID NO:425) and the nucleic acid sequence HPP42B (29B) (SEQ ID NO:29) which encodes HPP42;

Figures 43A and 30B contain the amino acid sequence of *H. pylori* polypeptide HPP43 (43A) (SEQ ID NO:426) and the nucleic acid sequence HPP43B (30B) (SEQ ID NO:30) which encodes HPP43;

Figures 44A and 31B contain the amino acid sequence of *H. pylori* polypeptide HPP44 (44A) (SEQ ID NO:427) and the nucleic acid sequence HPP44B (31B) (SEQ ID NO:31) which encodes HPP44;

Figures 45A and 32B contain the amino acid sequence of *H. pylori* polypeptide HPP45 (45A) (SEQ ID NO:428) and the nucleic acid sequence HPP45B (32B) (SEQ ID NO:32) which encodes HPP45;

Figure 46A contains the amino acid sequence of *H. pylori* polypeptide HPP46 (46A) (SEQ ID NO:429);

Figures 47A and 33B contain the amino acid sequence of *H. pylori* polypeptide HPP47 (47A) (SEQ ID NO:430) and the nucleic acid sequence HPP47B (33B) (SEQ ID NO:33) which encodes HPP47;

Figures 48A and 34B contain the amino acid sequence of *H. pylori* polypeptide HPP48 (48A) (SEQ ID NO:431) and the nucleic acid sequence HPP48B (34B) (SEQ ID NO:34) which encodes HPP48;

Figures 49A and 35B contain the amino acid sequence of *H. pylori* polypeptide HPP49 (49A) (SEQ ID NO:432) and the nucleic acid sequence HPP49B (35B) (SEQ ID NO:35) which encodes HPP49;

Figures 50A and 36B contain the amino acid sequence of *H. pylori* polypeptide HPP50 (50A) (SEQ ID NO:433) and the nucleic acid sequence HPP50B (36B) (SEQ ID NO:36) which encodes HPP50;

Figures 51A and 37B contain the amino acid sequence of *H. pylori* polypeptide HPP51 (51A) (SEQ ID NO:434) and the nucleic acid sequence HPP51B (37B) (SEQ ID NO:37) which encodes HPP51;

Figures 52A and 38B contain the amino acid sequence of *H. pylori* polypeptide HPP52 (52A) (SEQ ID NO:435) and the nucleic acid sequence HPP52B (38B) (SEQ ID NO:38) which encodes HPP52;

Figures 53A and 39B contain the amino acid sequence of *H. pylori* polypeptide HPP53 (53A) (SEQ ID NO:436) and the nucleic acid sequence HPP53B (39B) (SEQ ID NO:39) which encodes HPP53;

Figures 54A and 40B contain the amino acid sequence of *H. pylori* polypeptide HPP54 (54A) (SEQ ID NO:437) and the nucleic acid sequence HPP54B (40B) (SEQ ID NO:40) which encodes HPP54;

Figure 55A contains the amino acid sequence of *H. pylori* polypeptide HPP55 (55A) (SEQ ID NO:438);

Figures 56A and 41B contain the amino acid sequence of *H. pylori* polypeptide HPP56 (56A) (SEQ ID NO:439) and the nucleic acid sequence HPP56B (41B) (SEQ ID NO:41) which encodes HPP56;

Figures 57A and 42B contain the amino acid sequence of *H. pylori* polypeptide HPP57 (57A) (SEQ ID NO:440) and the nucleic acid sequence HPP57B (42B) (SEQ ID NO:42) which encodes HPP57;

Figure 58A contains the amino acid sequence of *H. pylori* polypeptide HPP58 (58A) (SEQ ID NO:441);

Figures 59A and 43B contain the amino acid sequence of *H. pylori* polypeptide HPP59 (59A) (SEQ ID NO:442) and the nucleic acid sequence HPP59B (43B) (SEQ ID NO:43) which encodes HPP59;

Figure 60A contains the amino acid sequence of *H. pylori* polypeptide HPP60 (60A) (SEQ ID NO:443);

Figures 61A and 44B contain the amino acid sequence of *H. pylori* polypeptide HPP61 (61A) (SEQ ID NO:444) and the nucleic acid sequence HPP61B (44B) (SEQ ID NO:44) which encodes HPP61;

Figures 62A and 45B contain the amino acid sequence of *H. pylori* polypeptide HPP62 (62A) (SEQ ID NO:445) and the nucleic acid sequence HPP62B (45B) (SEQ ID NO:45) which encodes HPP62;

Figures 63A and 46B contain the amino acid sequence of *H. pylori* polypeptide HPP63 (63A) (SEQ ID NO:446)and the nucleic acid sequence HPP63B (46B) (SEQ ID NO:46) which encodes HPP63;

Figures 64A and 47B contain the amino acid sequence of *H. pylori* polypeptide HPP64 (64A) (SEQ ID NO:447) and the nucleic acid sequence HPP64B (47B) (SEQ ID NO:47) which encodes HPP64;

Figures 65A and 48B contain the amino acid sequence of *H. pylori* polypeptide HPP65 (65A) (SEQ ID NO:448) and the nucleic acid sequence HPP65B (48B) (SEQ ID NO:48) which encodes HPP65;

Figure 66A contains the amino acid sequence of *H. pylori* polypeptide HPP66 (66A) (SEQ ID NO:449);

Figures 67A and 49B contain the amino acid sequence of *H. pylori* polypeptide HPP67 (67A) (SEQ ID NO:450) and the nucleic acid sequence HPP67B (49B) (SEQ ID NO:49) which encodes HPP67;

Figure 68A contains the amino acid sequence of *H. pylori* polypeptide HPP68 (68A) (SEQ ID NO:451);

Figures 69A and 50B contain the amino acid sequence of *H. pylori* polypeptide HPP69 (69A) (SEQ ID NO:452) and the nucleic acid sequence HPP69B (50B) (SEQ ID NO:50) which encodes HPP69;

Figures 70A and 51B contain the amino acid sequence of *H. pylori* polypeptide HPP70 (70A) (SEQ ID NO:453) and the nucleic acid sequence HPP70B (51B) (SEQ ID NO:51) which encodes HPP70.

Figure 71A contains the amino acid sequence of *H. pylori* polypeptide HPP71 (71A) (SEQ ID NO:454);

Figures 72A and 52B contain the amino acid sequence of *H. pylori* polypeptide HPP72 (72A) (SEQ ID NO:455) and the nucleic acid sequence HPP72B (52B) (SEQ ID NO:52) which encodes HPP72;

Figures 73A and 53B contain the amino acid sequence of *H. pylori* polypeptide HPP73 (73A) (SEQ ID NO:456) and the nucleic acid sequence HPP73B (53B) (SEQ ID NO:53) which encodes HPP73;.

Figures 74A and 54B contain the amino acid sequence of *H. pylori* polypeptide HPP74 (74A) (SEQ ID NO:457) and the nucleic acid sequence HPP74B (54B) (SEQ ID NO:54) which encodes HPP74;

Figure 75A contains the amino acid sequence of *H. pylori* polypeptide HPP75 (75A) (SEQ ID NO:458);

Figures 76A and 55B contain the amino acid sequence of *H. pylori* polypeptide HPP76 (76A) (SEQ ID NO:459) and the nucleic acid sequence HPP76B (55B) (SEQ ID NO:55) which encodes HPP76;

Figures 77A and 56B contain the amino acid sequence of *H. pylori* polypeptide HPP77 (77A) (SEQ ID NO:460) and the nucleic acid sequence HPP77B (56B) (SEQ ID NO:56) which encodes HPP77;

Figures 78A and 57B contain the amino acid sequence of *H. pylori* polypeptide HPP78 (78A) (SEQ ID NO:461) and the nucleic acid sequence HPP78B (57B) (SEQ ID NO:57) which encodes HPP78;

Figures 79A and 58B contain the amino acid sequence of *H. pylori* polypeptide HPP79 (79A) (SEQ ID NO:462) and the nucleic acid sequence HPP79B (58B) (SEQ ID NO:58) which encodes HPP79;

Figures 80A and 59B contain the amino acid sequence of *H. pylori* polypeptide HPP80 (80A) (SEQ ID NO:463) and the nucleic acid sequence HPP80B (59B) (SEQ ID NO:59) which encodes HPP80;

Figures 81A and 60B contain the amino acid sequence of *H. pylori* polypeptide HPP81 (81A) (SEQ ID NO:464) and the nucleic acid sequence HPP81B (60B) (SEQ ID NO:60) which encodes HPP81;

Figures 82A and 61B contain the amino acid sequence of *H. pylori* polypeptide HPP82 (82A) (SEQ ID NO:465) and the nucleic acid sequence HPP82B (61B) (SEQ ID NO:61) which encodes HPP82;

Figures 83A and 62B contain the amino acid sequence of *H. pylori* polypeptide HPP83 (83A) (SEQ ID NO:466) and the nucleic acid sequence HPP83B (62B) (SEQ ID NO:62) which encodes HPP83;

Figures 84A and 63B contain the amino acid sequence of *H. pylori* polypeptide HPP84 (84A) (SEQ ID NO:467) and the nucleic acid sequence HPP84B (63B) (SEQ ID NO:63) which encodes HPP84;

Figures 85A and 64B contain the amino acid sequence of *H. pylori* polypeptide HPP85 (85A) (SEQ ID NO:468) and the nucleic acid sequence HPP85B (64B) (SEQ ID NO:64) which encodes HPP85;

Figures 86A and 65B contain the amino acid sequence of *H. pylori* polypeptide HPP86 (86A) (SEQ ID NO:469) and the nucleic acid sequence HPP86B (65B) (SEQ ID NO:65) which encodes HPP86;

Figures 87A and 66B contain the amino acid sequence of *H. pylori* polypeptide HPP87 (87A) (SEQ ID NO:470) and the nucleic acid sequence HPP87B (66B) (SEQ ID NO:66) which encodes HPP87;

Figures 88A and 67B contain the amino acid sequence of *H. pylori* polypeptide HPP88 (88A) (SEQ ID NO:471) and the nucleic acid sequence HPP88B (67B) (SEQ ID NO:67) which encodes HPP88;

Figure 89A contains the amino acid sequence of *H. pylori* polypeptide HPP89 (89A) (SEQ ID NO:472);

Figure 90A contains the amino acid sequence of *H. pylori* polypeptide HPP90 (90A)(SEQ ID NO:473);

Figures 91A and 68B contain the amino acid sequence of *H. pylori* polypeptide HPP91 (91A) (SEQ ID NO:474) and the nucleic acid sequence HPP91B (68B) (SEQ ID NO:68) which encodes HPP91;

Figures 92A and 69B contain the amino acid sequence of *H. pylori* polypeptide HPP92 (92A) (SEQ ID NO:475) and the nucleic acid sequence HPP92B (69B) (SEQ ID NO:69) which encodes HPP92;

Figure 93A contains the amino acid sequence of *H. pylori* polypeptide HPP93 (93A) (SEQ ID NO: 476);

Figure 94A contains the amino acid sequence of *H. pylori* polypeptide HPP94 (94A) (SEQ ID NO:477);

Figures 95A and 70B contain the amino acid sequence of *H. pylori* polypeptide HPP95 (95A) (SEQ ID NO:478) and the nucleic acid sequence HPP95B (70B) (SEQ ID NO:70) which encodes HPP95;

Figures 96A and 71B contain the amino acid sequence of *H. pylori* polypeptide HPP96 (96A) (SEQ ID NO:479) and the nucleic acid sequence HPP96B (71B) (SEQ ID NO:71) which encodes HPP96;

Figure 97A contains the amino acid sequence of *H. pylori* polypeptide HPP97 (97A) (SEQ ID NO:480);

Figures 98A and 72B contain the amino acid sequence of *H. pylori* polypeptide HPP98 (98A) (SEQ ID NO:481) and the nucleic acid sequence HPP98B (72B) (SEQ ID NO:72) which encodes HPP98;

Figures 99A and 73B contain the amino acid sequence of *H. pylori* polypeptide HPP99 (99A) (SEQ ID NO:482) and the nucleic acid sequence HPP99B (73B) (SEQ ID NO:73) which encodes HPP99;

Figures 100A and 74B contain the amino acid sequence of *H. pylori* polypeptide HPP100 (100A) (SEQ ID NO:483) and the nucleic acid sequence HPP100B (74B) (SEQ ID NO:74) which encodes HPP100;

Figure 101A contains the amino acid sequence of *H. pylori* polypeptide HPP101 (101A) (SEQ ID NO:484);

Figures 102A and 75B contain the amino acid sequence of *H. pylori* polypeptide HPP102 (102A) (SEQ ID NO:485) and the nucleic acid sequence HPP102B (75B) (SEQ ID NO:75) which encodes HPP102;

Figure 103A contains the amino acid sequence of *H. pylori* polypeptide HPP103 (103A) (SEQ ID NO:486);

Figure 104A contains the amino acid sequence of *H. pylori* polypeptide HPP104 (104A) (SEQ ID NO:487);

Figures 105A and 76B contain the amino acid sequence of *H. pylori* polypeptide HPP105 (105A) (SEQ ID NO:488) and the nucleic acid sequence HPP105B (76B) (SEQ ID NO:76) which encodes HPP105;

Figures 106A and 77B contain the amino acid sequence of *H. pylori* polypeptide HPP106 (106A) (SEQ ID NO:489) and the nucleic acid sequence HPP106B (77B) (SEQ ID NO:77) which encodes HPP106;

Figure 107A contains the amino acid sequence of *H. pylori* polypeptide HPP107 (107A) (SEQ ID NO:490);

Figures 108A and 78B contain the amino acid sequence of *H. pylori* polypeptide HPP108 (108A) (SEQ ID NO:491) and the nucleic acid sequence HPP108B (78B) (SEQ ID NO:78) which encodes HPP108;

Figures 109A and 79B contain the amino acid sequence of *H. pylori* polypeptide HPP109 (109A) (SEQ ID NO:492) and the nucleic acid sequence HPP109B (79B)(SEQ ID NO:79) which encodes HPP109;

Figure 110A contains the amino acid sequence of *H. pylori* polypeptide HPP110 (110A) (SEQ ID NO:493);

Figure 111A contains the amino acid sequence of *H. pylori* polypeptide HPP111 (111A) (SEQ ID NO:494);

Figures 112A and 80B contain the amino acid sequence of *H. pylori* polypeptide HPP112 (112A) (SEQ ID NO:495) and the nucleic acid sequence HPP112B (80B) (SEQ ID NO:80) which encodes HPP112;

Figures 113A and 81B contain the amino acid sequence of *H. pylori* polypeptide HPP113 (113A) (SEQ ID NO:496) and the nucleic acid sequence HPP113B (81B) (SEQ ID NO:81) which encodes HPP113;

Figure 114A contains the amino acid sequence of *H. pylori* polypeptide HPP114 (114A) (SEQ ID NO: 497);

Figures 115A and 82B contain the amino acid sequence of *H. pylori* polypeptide HPP115 (115A) (SEQ ID NO:498) and the nucleic acid sequence HPP115B (82B) (SEQ ID NO:82) which encodes HPP115;

Figure 116A contains the amino acid sequence of *H. pylori* polypeptide HPP116 (116A) (SEQ ID NO:499);

Figures 117A and 83B contain the amino acid sequence of *H. pylori* polypeptide HPP117 (117A) (SEQ ID NO:500) and the nucleic acid sequence HPP117B (83B) (SEQ ID NO:83) which encodes HPP117;

Figures 118A and 84B contain the amino acid sequence of *H. pylori* polypeptide HPP118 (118A) (SEQ ID NO:501) and the nucleic acid sequence HPP118B (84B) (SEQ ID NO:84) which encodes HPP118;

Figures 119A and 85B contain the amino acid sequence of *H. pylori* polypeptide HPP119 (119A) (SEQ ID NO:502) and the nucleic acid sequence HPP119B (85B) (SEQ ID NO:85) which encodes HPP119;

Figures 120A and 86B contain the amino acid sequence of *H. pylori* polypeptide HPP120 (120A) (SEQ ID NO:503) and the nucleic acid sequence HPP120B (86B) (SEQ ID NO:86) which encodes HPP120;

Figures 121A and 87B contain the amino acid sequence of *H. pylori* polypeptide HPP121 (121A) (SEQ ID NO:504) and the nucleic acid sequence HPP121B (87B) (SEQ ID NO:87) which encodes HPP121;

Figures 122A and 88B contain the amino acid sequence of *H. pylori* polypeptide HPP122 (122A) (SEQ ID NO:505) and the nucleic acid sequence HPP122B (88B) (SEQ ID NO:88) which encodes HPP122;

Figure 123A contains the amino acid sequence of *H. pylori* polypeptide HPP123 (123A) (SEQ ID NO:506);

Figure 124A contains the amino acid sequence of *H. pylori* polypeptide HPP124 (124A) (SEQ ID NO:507);

Figures 125A and 89B contain the amino acid sequence of *H. pylori* polypeptide HPP125 (125A) (SEQ ID NO:508) and the nucleic acid sequence HPP125B (89B) (SEQ ID NO:89) which encodes HPP125;

Figures 126A and 90B contain the amino acid sequence of *H. pylori* polypeptide HPP126 (126A) (SEQ ID NO:509) and the nucleic acid sequence HPP126B (90B) (SEQ ID NO:90) which encodes HPP126;

Figures 127A and 91B contain the amino acid sequence of *H. pylori* polypeptide HPP127 (127A) (SEQ ID NO:510) and the nucleic acid sequence HPP127B (91B) (SEQ ID NO:91) which encodes HPP127;

Figures 128A and 92B contain the amino acid sequence of *H. pylori* polypeptide HPP128 (128A) (SEQ ID NO:511) and the nucleic acid sequence HPP128B (92B) (SEQ ID NO:92) which encodes HPP128;

Figures 129A and 93B contain the amino acid sequence of *H. pylori* polypeptide HPP129 (129A) (SEQ ID NO:512) and the nucleic acid sequence HPP129B (93B) (SEQ ID NO:93) which encodes HPP129;

Figures 130A and 94B contain the amino acid sequence of *H. pylori* polypeptide HPP130 (130A) (SEQ ID NO:513) and the nucleic acid sequence HPP130B (94B) (SEQ ID NO:94) which encodes HPP130;

Figures 131A and 95B contain the amino acid sequence of *H. pylori* polypeptide HPP131 (131A) (SEQ ID NO:514) and the nucleic acid sequence HPP131B (95B) (SEQ ID NO:95) which encodes HPP131;

Figures 132A and 96B contain the amino acid sequence of *H. pylori* polypeptide HPP132 (132A) (SEQ ID NO:515) and the nucleic acid sequence HPP132B (96B) (SEQ ID NO:96) which encodes HPP132;

Figure 133A contains the amino acid sequence of *H. pylori* polypeptide HPP133 (133A) (SEQ ID NO:516);

Figures 134A and 97B contains the amino acid sequence of *H. pylori* polypeptide HPP134 (134A) (SEQ ID NO:517) and the nucleic acid sequence HPP134B (97B) (SEQ ID NO:97) which encodes HPP134;

Figures 135A and 98B contain the amino acid sequence of *H. pylori* polypeptide HPP135 (135A) (SEQ ID NO:518) and the nucleic acid sequence HPP135B (98B) (SEQ ID NO:98) which encodes HPP135;

Figure 136A contains the amino acid sequence of *H. pylori* polypeptide HPP136 (136A) (SEQ ID NO:519);

Figures 137A and 99B contain the amino acid sequence of *H. pylori* polypeptide HPP137 (137A) (SEQ ID NO:520) and the nucleic acid sequence HPP137B (99B) (SEQ ID NO:99) which encodes HPP137;

Figures 138A and 100B contain the amino acid sequence of *H. pylori* polypeptide HPP138 (138A) (SEQ ID NO:521) and the nucleic acid sequence HPP138B (100B) (SEQ ID NO:100) which encodes HPP138;

Figure 139A contains the amino acid sequence of *H. pylori* polypeptide HPP139 (139A) (SEQ ID NO:522);

Figure 140A contains the amino acid sequence of *H. pylori* polypeptide HPP140 (140A) (SEQ ID NO:523);

Figure 141A contains the amino acid sequence of *H. pylori* polypeptide HPP141 (141A) (SEQ ID NO:524);

Figures 142A and 101B contain the amino acid sequence of *H. pylori* polypeptide HPP142 (142A) (SEQ ID NO:525) and the nucleic acid sequence HPP142B (101B) (SEQ ID NO:101) which encodes HPP142;

Figures 143A and 102B contain the amino acid sequence of *H. pylori* polypeptide HPP143 (143A) (SEQ ID NO:526) and the nucleic acid sequence HPP143B (102B) (SEQ ID NO:102) which encodes HPP143;

Figure 144A contains the amino acid sequence of *H. pylori* polypeptide HPP144 (144A) (SEQ ID NO:527);

Figures 145A and 103B contain the amino acid sequence of *H. pylori* polypeptide HPP145 (145A) (SEQ ID NO:528) and the nucleic acid sequence HPP145B (103B) (SEQ ID NO:103) which encodes HPP145;

Figures 146A and 104B contain the amino acid sequence of *H. pylori* polypeptide HPP146 (146A) (SEQ ID NO:529) and the nucleic acid sequence HPP146B (104B) (SEQ ID NO:104) which encodes HPP146;

Figures 147A and 105B contain the amino acid sequence of *H. pylori* polypeptide HPP147 (147A) (SEQ ID NO:530) and the nucleic acid sequence HPP147B (105B) (SEQ ID NO:105) which encodes HPP147;

Figure 148A contains the amino acid sequence of *H. pylori* polypeptide HPP148 (148A) (SEQ ID NO:531);

Figures 149A and 106B contain the amino acid sequence of *H. pylori* polypeptide HPP149 (149A) (SEQ ID NO:532) and the nucleic acid sequence HPP149B (106B) (SEQ ID NO:106) which encodes HPP149;

Figure 150A contains the amino acid sequence of *H. pylori* polypeptide HPP150 (150A) (SEQ ID NO:533);

Figures 151A and 107B contain the amino acid sequence of *H. pylori* polypeptide HPP151 (151A) (SEQ ID NO:534) and the nucleic acid sequence HPP151B (107B) (SEQ ID NO:107) which encodes HPP151;

Figures 152A and 108B contain the amino acid sequence of *H. pylori* polypeptide HPP152 (152A) (SEQ ID NO:535) and the nucleic acid sequence HPP152B (108B) (SEQ ID NO:108) which encodes HPP152;

Figures 153A and 109B contain the amino acid sequence of *H. pylori* polypeptide HPP153 (153A) (SEQ ID NO:536) and the nucleic acid sequence HPP153B (109B) (SEQ ID NO:109) which encodes HPP153A;

Figure 154A contains the amino acid sequence of *H. pylori* polypeptide HPP154 (154A) (SEQ ID NO:537);

Figures 155A and 110B contain the amino acid sequence of *H. pylori* polypeptide HPP155 (155A) (SEQ ID NO:538) and the nucleic acid sequence HPP155B (110B) (SEQ ID NO:110) which encodes HPP155;

Figure 156A contains the amino acid sequence of *H. pylori* polypeptide HPP156 (156A) (SEQ ID NO: 539);

Figure 157A contains the amino acid sequence of *H. pylori* polypeptide HPP157 (157A) (SEQ ID NO:540);

Figures 158A and 111B contain the amino acid sequence of *H. pylori* polypeptide HPP158 (158A) (SEQ ID NO:541) and the nucleic acid sequence HPP158B (111B) (SEQ ID NO:111) which encodes HPP158;

Figures 159A and 112B contain the amino acid sequence of *H. pylori* polypeptide HPP159 (159A) (SEQ ID NO:542) and the nucleic acid sequence HPP159B (112B) (SEQ ID NO:112) which encodes HPP159;

Figures 160A and 113B contain the amino acid sequence of *H. pylori* polypeptide HPP160 (160A) (SEQ ID NO:543) and the nucleic acid sequence HPP160B (113B) (SEQ ID NO:113) which encodes HPP160;

Figure 161A contains the amino acid sequence of *H. pylori* polypeptide HPP161 (161A) (SEQ ID NO:544);

Figures 162A and 114B contain the amino acid sequence of *H. pylori* polypeptide HPP162 (162A) (SEQ ID NO:545) and the nucleic acid sequence HPP162B (114B) (SEQ ID NO:114) which encodes HPP162;

Figures 163A and 115B contain the amino acid sequence of *H. pylori* polypeptide HPP163 (163A) (SEQ ID NO:546) and the nucleic acid sequence HPP163B (115B) (SEQ ID NO:115) which encodes HPP163;

Figures 164A and 116B contain the amino acid sequence of *H. pylori* polypeptide HPP164 (164A) (SEQ ID NO:547) and the nucleic acid sequence HPP164B (116B) (SEQ ID NO:116) which encodes HPP164;

Figures 165A and 117B contain the amino acid sequence of *H. pylori* polypeptide HPP165 (165A) (SEQ ID NO:548) and the nucleic acid sequence HPP165B (117B) (SEQ ID NO:117) which encodes HPP165;

Figures 166A and 118B contain the amino acid sequence of *H. pylori* polypeptide HPP166 (166A) (SEQ ID NO:549) and the nucleic acid sequence HPP166B (118B) (SEQ ID NO:118) which encodes HPP166;

Figures 167A and 119B contain the amino acid sequence of *H. pylori* polypeptide HPP167 (167A) (SEQ ID NO:550) and the nucleic acid sequence HPP167B (119B) (SEQ ID NO:119) which encodes HPP167;

Figure 168A contains the amino acid sequence of *H. pylori* polypeptide HPP168 (168A) (SEQ ID NO:551);

Figures 169A and 120B contain the amino acid sequence of *H. pylori* polypeptide HPP169 (169A) (SEQ ID NO:552) and the nucleic acid sequence HPP169B (120B) (SEQ ID NO:120) which encodes HPP169;

Figure 170A contains the amino acid sequence of *H. pylori* polypeptide HPP170 (170A) (SEQ ID NO:553);

Figures 171A and 121B contain the amino acid sequence of *H. pylori* polypeptide HPP171 (171A) (SEQ ID NO:554) and the nucleic acid sequence HPP171B (121B) (SEQ ID NO:559) which encodes HPP171;

Figures 172A and 122B contain the amino acid sequence of *H. pylori* polypeptide HPP172 (172A) (SEQ ID NO:555) and the nucleic acid sequence HPP172B (122B) (SEQ ID NO:122) which encodes HPP172;

Figure 173A contains the amino acid sequence of *H. pylori* polypeptide HPP173 (173A) (SEQ ID NO:556);

Figures 174A and 123B contain the amino acid sequence of *H. pylori* polypeptide HPP174 (174A) (SEQ ID NO: 557) and the nucleic acid sequence HPP174B (123B) (SEQ ID NO:123) which encodes HPP174;

Figure 175A contains the amino acid sequence of *H. pylori* polypeptide HPP175 (175A) (SEQ ID NO:558);

Figures 176A and 124B contain the amino acid sequence of *H. pylori* polypeptide HPP176 (176A) (SEQ ID NO:559) and the nucleic acid sequence HPP176B (124B) (SEQ ID NO:124) which encodes HPP176;

Figures 177A and 125B contain the amino acid sequence of *H. pylori* polypeptide HPP177 (177A) (SEQ ID NO:560) and the nucleic acid sequence HPP177B (125B) (SEQ ID NO:125) which encodes HPP177;

Figure 178A contains the amino acid sequence of *H. pylori* polypeptide HPP178 (178A) (SEQ ID NO:561);

Figures 179A and 126B contain the amino acid sequence of *H. pylori* polypeptide HPP179 (179A) (SEQ ID NO:562) and the nucleic acid sequence HPP179B (126B) (SEQ ID NO:126) which encodes HPP179;

Figures 180A and 127B contain the amino acid sequence of *H. pylori* polypeptide HPP180 (180A) (SEQ ID NO:563) and the nucleic acid sequence HPP180B (127B) (SEQ ID NO:127) which encodes HPP180;

Figures 181A and 128B contain the amino acid sequence of *H. pylori* polypeptide HPP181 (181A) (SEQ ID NO:564) and the nucleic acid sequence HPP181B (128B) (SEQ ID NO:128) which encodes HPP181;

Figure 182A contains the amino acid sequence of *H. pylori* polypeptide HPP182 (182A) (SEQ ID NO:565);

Figure 183A contains the amino acid sequence of *H. pylori* polypeptide HPP183 (183A) (SEQ ID NO:566);

Figures 184A and 129B contain the amino acid sequence of *H. pylori* polypeptide HPP184 (184A) (SEQ ID NO:567) and the nucleic acid sequence HPP184B (129B) (SEQ ID NO:129) which encodes HPP184;

Figures 185A and 130B contain the amino acid sequence of *H. pylori* polypeptide HPP185 (185A) (SEQ ID NO:568) and the nucleic acid sequence HPP185B (130B) (SEQ ID NO:130) which encodes HPP185;

Figures 186A and 131B contain the amino acid sequence of *H. pylori* polypeptide HPP186 (186A) (SEQ ID NO:569) and the nucleic acid sequence HPP186B (131B) (SEQ ID NO:131) which encodes HPP186;

Figure 187A contains the amino acid sequence of *H. pylori* polypeptide HPP187 (187A) (SEQ ID NO:570);

Figures 188A and 132B contain the amino acid sequence of *H. pylori* polypeptide HPP188 (188A) (SEQ ID NO:571) and the nucleic acid sequence HPP188B (132B) (SEQ ID NO:132) which encodes HPP188;

Figure 189A contains the amino acid sequence of *H. pylori* polypeptide HPP189 (189A) (SEQ ID NO:572);

Figure 190A contains the amino acid sequence of *H. pylori* polypeptide HPP190 (190A) (SEQ ID NO:573);

Figures 191A and 133B contain the amino acid sequence of *H. pylori* polypeptide HPP191 (191A) (SEQ ID NO:574) and the nucleic acid sequence HPP191B (133B) (SEQ ID NO:133) which encodes HPP191;

Figures 192A and 134B contain the amino acid sequence of *H. pylori* polypeptide HPP192 (192A) (SEQ ID NO:575) and the nucleic acid sequence HPP192B (134B) (SEQ ID NO:134) which encodes HPP192;

Figures 193A and 135B contain the amino acid sequence of *H. pylori* polypeptide HPP193 (193A) (SEQ ID NO:576) and the nucleic acid sequence HPP193B (135B) (SEQ ID NO:135) which encodes HPP193;

Figures 194A and 136B contain the amino acid sequence of *H. pylori* polypeptide HPP194 (194A) (SEQ ID NO:577) and the nucleic acid sequence HPP194B (136B) (SEQ ID NO:136) which encodes HPP194;

Figure 195A contains the amino acid sequence of *H. pylori* polypeptide HPP195 (195A) (SEQ ID NO:578);

Figures 196A and 137B contain the amino acid sequence of *H. pylori* polypeptide HPP196 (196A) (SEQ ID NO:579) and the nucleic acid sequence HPP196B (137B) (SEQ ID NO:137) which encodes HPP196;

Figure 197A contains the amino acid sequence of *H. pylori* polypeptide HPP197 (197A) (SEQ ID NO:580);

Figures 198A and 138B contain the amino acid sequence of *H. pylori* polypeptide HPP198 (198A) (SEQ ID NO:581) and the nucleic acid sequence HPP198B (138B) (SEQ ID NO:138) which encodes HPP198;

Figure 199A contains the amino acid sequence of *H. pylori* polypeptide HPP199 (199A) (SEQ ID NO:582);

Figures 200A and 139B contain the amino acid sequence of *H. pylori* polypeptide HPP200 (200A) (SEQ ID NO:583) and the nucleic acid sequence HPP200B (139B) (SEQ ID NO:139) which encodes HPP200;

Figures 201A and 140B contain the amino acid sequence of *H. pylori* polypeptide HPP201 (201A) (SEQ ID NO:584) and the nucleic acid sequence HPP201B (140B) (SEQ ID NO:140) which encodes HPP201;

Figures 202A and 141B contain the amino acid sequence of *H. pylori* polypeptide HPP202 (202A) (SEQ ID NO:585) and the nucleic acid sequence HPP202B (141B) (SEQ ID NO:141) which encodes HPP202;

Figures 203A and 142B contain the amino acid sequence of *H. pylori* polypeptide HPP203 (203A) (SEQ ID NO:586) and the nucleic acid sequence HPP203B (142B) (SEQ ID NO:142) which encodes HPP203;

Figure 204A contains the amino acid sequence of *H. pylori* polypeptide HPP204 (204A) (SEQ ID NO:587);

Figures 205A and 143B contain the amino acid sequence of *H. pylori* polypeptide HPP205 (205A) (SEQ ID NO:588) and the nucleic acid sequence HPP205B (143B) (SEQ ID NO:143) which encodes HPP205;

Figure 206A contains the amino acid sequence of *H. pylori* polypeptide HPP206 (206A) (SEQ ID NO:589);

Figures 207A and 144B contain the amino acid sequence of *H. pylori* polypeptide HPP207 (207A) (SEQ ID NO:590) and the nucleic acid sequence HPP207B (144B) (SEQ ID NO:144) which encodes HPP207;

Figures 208A and 145B contain the amino acid sequence of *H. pylori* polypeptide HPP208 (208A) (SEQ ID NO:591) and the nucleic acid sequence HPP208B (145B) (SEQ ID NO:145) which encodes HPP208;

Figure 209A contains the amino acid sequence of *H. pylori* polypeptide HPP209 (209A) (SEQ ID NO:592);

Figures 210A and 146B contain the amino acid sequence of *H. pylori* polypeptide HPP210 (210A) (SEQ ID NO:593) and the nucleic acid sequence HPP210B (146B) (SEQ ID NO:146) which encodes HPP210;

Figure 211A contains the amino acid sequence of *H. pylori* polypeptide HPP211 (211A) (SEQ ID NO:594);

Figures 212A and 147B contain the amino acid sequence of *H. pylori* polypeptide HPP212 (212A) (SEQ ID NO:595) and the nucleic acid sequence HPP212B (147B) (SEQ ID NO:147) which encodes HPP212;

Figures 213A and 148B contain the amino acid sequence of *H. pylori* polypeptide HPP213 (213A) (SEQ ID NO:596) and the nucleic acid sequence HPP213B (148B) (SEQ ID NO:148) which encodes HPP213;

Figures 214A and 149B contain the amino acid sequence of *H. pylori* polypeptide HPP214 (214A) (SEQ ID NO:597) and the nucleic acid sequence HPP214B (149B) (SEQ ID NO:149) which encodes HPP214;

Figures 215A and 150B contain the amino acid sequence of *H. pylori* polypeptide HPP215 (215A) (SEQ ID NO:598) and the nucleic acid sequence HPP215B (150B) (SEQ ID NO:150) which encodes HPP215;

Figures 216A and 151B contain the amino acid sequence of *H. pylori* polypeptide HPP216 (216A) (SEQ ID NO:599) and the nucleic acid sequence HPP216B (151B) (SEQ ID NO:151) which encodes HPP216;

Figures 217A and 152B contain the amino acid sequence of *H. pylori* polypeptide HPP217 (217A) (SEQ ID NO:600) and the nucleic acid sequence HPP217B (152B) (SEQ ID NO:152) which encodes HPP217;

Figures 218A and 153B contain the amino acid sequence of *H. pylori* polypeptide HPP218 (218A) (SEQ ID NO:601) and the nucleic acid sequence HPP218B (153B) (SEQ ID NO:153) which encodes HPP218;

Figures 219A and 154B contain the amino acid sequence of *H. pylori* polypeptide HPP219 (219A) (SEQ ID NO:602) and the nucleic acid sequence HPP219B (154B) (SEQ ID NO:154) which encodes HPP219;

Figure 220A contains the amino acid sequence of *H. pylori* polypeptide HPP220 (220A) (SEQ ID NO:603);

Figures 221A and 155B contain the amino acid sequence of *H. pylori* polypeptide HPP221 (221A) (SEQ ID NO:604) and the nucleic acid sequence HPP221B (155B) (SEQ ID NO:155) which encodes HPP221;

Figures 222A and 156B contain the amino acid sequence of *H. pylori* polypeptide HPP222 (222A) (SEQ ID NO:605) and the nucleic acid sequence HPP222B (156B) (SEQ ID NO:156) which encodes HPP222;

Figures 223A and 157B contain the amino acid sequence of *H. pylori* polypeptide HPP223 (223A) (SEQ ID NO:606) and the nucleic acid sequence HPP223B (157B) (SEQ ID NO:157) which encodes HPP223;

Figure 224A contains the amino acid sequence of *H. pylori* polypeptide HPP224 (224A) (SEQ ID NO:607);

Figures 225A and 158B contain the amino acid sequence of *H. pylori* polypeptide HPP225 (225A) (SEQ ID NO:608) and the nucleic acid sequence HPP225B (158B) (SEQ ID NO:158) which encodes HPP225;

Figures 226A and 159B contain the amino acid sequence of *H. pylori* polypeptide HPP226 (226A) (SEQ ID NO:609) and the nucleic acid sequence HPP226B (159B) (SEQ ID NO:159) which encodes HPP226;

Figures 227A and 160B contain the amino acid sequence of *H. pylori* polypeptide HPP227 (227A) (SEQ ID NO:610) and the nucleic acid sequence HPP227B (160B) (SEQ ID NO:160) which encodes HPP227;

Figures 228A and 161B contain the amino acid sequence of *H. pylori* polypeptide HPP228 (228A) (SEQ ID NO:611) and the nucleic acid sequence HPP228B (161B) (SEQ ID NO:161) which encodes HPP228;

Figures 229A and 162B contain the amino acid sequence of *H. pylori* polypeptide HPP229 (229A) (SEQ ID NO:612) and the nucleic acid sequence HPP229B (162B) (SEQ ID NO:162) which encodes HPP229;

Figures 230A and 163B contain the amino acid sequence of *H. pylori* polypeptide HPP230 (230A) (SEQ ID NO:613) and the nucleic acid sequence HPP230B (163B) (SEQ ID NO:163) which encodes HPP230;

Figures 231A and 164B contain the amino acid sequence of *H. pylori* polypeptide HPP231 (231A) (SEQ ID NO:614) and the nucleic acid sequence HPP231B (164B) (SEQ ID NO:164) which encodes HPP231;

Figures 232A and 165B contain the amino acid sequence of *H. pylori* polypeptide HPP232 (232A) (SEQ ID NO:615) and the nucleic acid sequence HPP232B (165B) (SEQ ID NO:165) which encodes HPP232;

Figures 233A and 166B contain the amino acid sequence of *H. pylori* polypeptide HPP233 (233A) (SEQ ID NO:616) and the nucleic acid sequence HPP233B (166B) (SEQ ID NO:166) which encodes HPP233;

Figure 234A contains the amino acid sequence of *H. pylori* polypeptide HPP234 (234A) (SEQ ID NO:617);

Figure 235A contains the amino acid sequence of *H. pylori* polypeptide HPP235 (235A) (SEQ ID NO:618);

Figures 236A and 167B contain the amino acid sequence of *H. pylori* polypeptide HPP236 (236A) (SEQ ID NO:619) and the nucleic acid sequence HPP236B (167B) (SEQ ID NO:167) which encodes HPP236;

Figures 237A and 168B contain the amino acid sequence of *H. pylori* polypeptide HPP237 (237A) (SEQ ID NO:620) and the nucleic acid sequence HPP237B (168B) (SEQ ID NO:168) which encodes HPP237;

Figures 238A and 169B contain the amino acid sequence of *H. pylori* polypeptide HPP238 (238A) (SEQ ID NO:621) and the nucleic acid sequence HPP238B (169B) (SEQ ID NO:169) which encodes HPP238;

Figures 239A and 170B contain the amino acid sequence of *H. pylori* polypeptide HPP239 (239A) (SEQ ID NO:622) and the nucleic acid sequence HPP239B (170B) (SEQ ID NO:170) which encodes HPP239;

Figures 240A and 171B contain the amino acid sequence of *H. pylori* polypeptide HPP240 (240A) (SEQ ID NO:623) and the nucleic acid sequence HPP240B (171B) (SEQ ID NO:171) which encodes HPP240;

Figures 241A and 172B contain the amino acid sequence of *H. pylori* polypeptide HPP241 (241A) (SEQ ID NO:624) and the nucleic acid sequence HPP241B (172B) (SEQ ID NO:172) which encodes HPP241;

Figures 242A and 173B contain the amino acid sequence of *H. pylori* polypeptide HPP242 (242A) (SEQ ID NO:625) and the nucleic acid sequence HPP242B (173B) (SEQ ID NO:173) which encodes HPP242;

Figure 243A contains the amino acid sequence of *H. pylori* polypeptide HPP243 (243A) (SEQ ID NO:626);

Figures 244A and 174B contain the amino acid sequence of *H. pylori* polypeptide HPP244 (244A) (SEQ ID NO:627) and the nucleic acid sequence HPP244B (174B) (SEQ ID NO:174) which encodes HPP244;

Figures 245A and 175B contain the amino acid sequence of *H. pylori* polypeptide HPP245 (245A) (SEQ ID NO:628) and the nucleic acid sequence HPP245B (175B) (SEQ ID NO:175) which encodes HPP245;

Figures 246A and 176B contain the amino acid sequence of *H. pylori* polypeptide HPP246 (246A) (SEQ ID NO:629) and the nucleic acid sequence HPP246B (176B) (SEQ ID NO:176) which encodes HPP246;

Figures 247A and 177B contain the amino acid sequence of *H. pylori* polypeptide HPP247 (247A) (SEQ ID NO:630) and the nucleic acid sequence HPP247B (177B) (SEQ ID NO:177) which encodes HPP247;

Figures 248A and 178B contain the amino acid sequence of *H. pylori* polypeptide HPP248 (248A) (SEQ ID NO:631) and the nucleic acid sequence HPP248B (178B) (SEQ ID NO:178) which encodes HPP248;

Figures 249A and 179B contain the amino acid sequence of *H. pylori* polypeptide HPP249 (249A) (SEQ ID NO:632) and the nucleic acid sequence HPP249B (179B) (SEQ ID NO:179) which encodes HPP249;

Figures 250A and 180B contain the amino acid sequence of *H. pylori* polypeptide HPP250 (250A) (SEQ ID NO:633) and the nucleic acid sequence HPP250B (180B) (SEQ ID NO:180) which encodes HPP250;

Figures 251A and 181B contain the amino acid sequence of *H. pylori* polypeptide HPP251 (251A) (SEQ ID NO:634) and the nucleic acid sequence HPP251B (181B) (SEQ ID NO:181) which encodes HPP251;

Figures 252A and 182B contain the amino acid sequence of *H. pylori* polypeptide HPP252 (252A) (SEQ ID NO:635) and the nucleic acid sequence HPP252B (182B) (SEQ ID NO:182) which encodes HPP255;

Figures 253A and 183B contain the amino acid sequence of *H. pylori* polypeptide HPP253 (253A) (SEQ ID NO:636) and the nucleic acid sequence HPP253B (183B) (SEQ ID NO:183) which encodes HPP253;

Figures 254A and 184B contain the amino acid sequence of *H. pylori* polypeptide HPP254 (254A) (SEQ ID NO:637) and the nucleic acid sequence HPP254B (184B) (SEQ ID NO:184) which encodes HPP254;

Figures 255A and 185B contain the amino acid sequence of *H. pylori* polypeptide HPP255 (255A) (SEQ ID NO:638) and the nucleic acid sequence HPP255B (185B) (SEQ ID NO:185) which encodes HPP255;

Figure 256A contains the amino acid sequence of *H. pylori* polypeptide HPP256 (256A) (SEQ ID NO:639);

Figure 257A contains the amino acid sequence of *H. pylori* polypeptide HPP257 (257A) (SEQ ID NO:640);

Figures 258A and 186B contain the amino acid sequence of *H. pylori* polypeptide HPP258 (258A) (SEQ ID NO:641) and the nucleic acid sequence HPP258B (186B) (SEQ ID NO:186) which encodes HPP258;

Figures 259A and 187B contain the amino acid sequence of *H. pylori* polypeptide HPP259 (259A) (SEQ ID NO:642) and the nucleic acid sequence HPP259B (187B) (SEQ ID NO:187) which encodes HPP259;

Figures 260A and 188B contain the amino acid sequence of *H. pylori* polypeptide HPP260 (260A) (SEQ ID NO:643) and the nucleic acid sequence HPP260B (188B) (SEQ ID NO:188) which encodes HPP260;

Figures 261A and 189B contain the amino acid sequence of *H. pylori* polypeptide HPP261 (261A) (SEQ ID NO:644) and the nucleic acid sequence HPP261B (189B) (SEQ ID NO:189) which encodes HPP261;

Figures 262A and 190B contain the amino acid sequence of *H. pylori* polypeptide HPP262 (262A) (SEQ ID NO:645) and the nucleic acid sequence HPP262B (190B) (SEQ ID NO:190) which encodes HPP262;

Figures 263A and 191B contain the amino acid sequence of *H. pylori* polypeptide HPP263 (263A) (SEQ ID NO:646) and the nucleic acid sequence HPP263B (191B) (SEQ ID NO:191) which encodes HPP263;

Figures 264A and 192B contain the amino acid sequence of *H. pylori* polypeptide HPP264 (264A) (SEQ ID NO:647) and the nucleic acid sequence HPP264B (192B) (SEQ ID NO:192) which encodes HPP264;

Figure 265A contains the amino acid sequence of *H. pylori* polypeptide HPP265 (265A) (SEQ ID NO:648);

Figures 266A and 193B contain the amino acid sequence of *H. pylori* polypeptide HPP266 (266A) (SEQ ID NO:649) and the nucleic acid sequence HPP266B (193B) (SEQ ID NO:193) which encodes HPP266;

Figure 267A contains the amino acid sequence of *H. pylori* polypeptide HPP267 (267A) (SEQ ID NO:650);

Figures 268A and 194B contain the amino acid sequence of *H. pylori* polypeptide HPP268 (268A) (SEQ ID NO:651) and the nucleic acid sequence HPP268B (194B) (SEQ ID NO:194) which encodes HPP268;

Figure 269A contains the amino acid sequence of *H. pylori* polypeptide HPP269 (269A) (SEQ ID NO:652);

Figures 270A and 195B contain the amino acid sequence of *H. pylori* polypeptide HPP270 (270A) (SEQ ID NO:653) and the nucleic acid sequence HPP270B (195B) (SEQ ID NO:195) which encodes HPP270;

Figures 271A and 196B contain the amino acid sequence of *H. pylori* polypeptide HPP271 (271A) (SEQ ID NO:654) and the nucleic acid sequence HPP271B (196B) (SEQ ID NO:196) which encodes HPP271;

Figures 272A and 197B contain the amino acid sequence of *H. pylori* polypeptide HPP272 (272A) (SEQ ID NO:655) and the nucleic acid sequence HPP272B (197B) (SEQ ID NO:197) which encodes HPP272;

Figure 273A contains the amino acid sequence of *H. pylori* polypeptide HPP273 (273A) (SEQ ID NO:656);

Figures 274A and 198B contain the amino acid sequence of *H. pylori* polypeptide HPP274 (274A) (SEQ ID NO:657) and the nucleic acid sequence HPP274B (198B) (SEQ ID NO:198) which encodes HPP274;

Figure 275A contains the amino acid sequence of *H. pylori* polypeptide HPP275 (275A) (SEQ ID NO:658);

Figures 276A and 199B contain the amino acid sequence of *H. pylori* polypeptide HPP276 (276A) (SEQ ID NO:659) and the nucleic acid sequence HPP276B (199B) (SEQ ID NO:199) which encodes HPP276;

Figures 277A and 200B contain the amino acid sequence of *H. pylori* polypeptide HPP277 (277A) (SEQ ID NO:660) and the nucleic acid sequence HPP277B (200B) (SEQ ID NO:200) which encodes HPP277;

Figure 278A contains the amino acid sequence of *H. pylori* polypeptide HPP278 (278A) (SEQ ID NO:661);

Figure 279A contains the amino acid sequence of *H. pylori* polypeptide HPP279 (279A) (SEQ ID NO:662);

Figures 280A and 201B contain the amino acid sequence of *H. pylori* polypeptide HPP280 (280A) (SEQ ID NO:663) and the nucleic acid sequence HPP280B (201B) (SEQ ID NO:201) which encodes HPP280;

Figures 281A and 202B contain the amino acid sequence of *H. pylori* polypeptide HPP281 (281A) (SEQ ID NO:664) and the nucleic acid sequence HPP281B (202B) (SEQ ID NO:202) which encodes HPP281;

Figures 282A and 203B contain the amino acid sequence of *H. pylori* polypeptide HPP282 (282A) (SEQ ID NO:665) and the nucleic acid sequence HPP282B (203B) (SEQ ID NO:203) which encodes HPP282;

Figure 283A contains the amino acid sequence of *H. pylori* polypeptide HPP283 (283A) (SEQ ID NO:666);

Figures 284A and 204B contain the amino acid sequence of *H. pylori* polypeptide HPP284 (284A) (SEQ ID NO:667) and the nucleic acid sequence HPP284B (204B) (SEQ ID NO:204) which encodes HPP284;

Figure 285A contains the amino acid sequence of *H. pylori* polypeptide HPP285 (285A) (SEQ ID NO:668);

Figures 286A and 205B contain the amino acid sequence of *H. pylori* polypeptide HPP286 (286A) (SEQ ID NO:669) and the nucleic acid sequence HPP286B (205B) (SEQ ID NO:205) which encodes HPP286;

Figure 287A contains the amino acid sequence of *H. pylori* polypeptide HPP287 (287A) (SEQ ID NO:670);

Figure 288A contains the amino acid sequence of *H. pylori* polypeptide HPP288 (288A) (SEQ ID NO:671);

Figure 289A contains the amino acid sequence of *H. pylori* polypeptide HPP289 (289A) (SEQ ID NO:672);

Figures 290A and 206B contain the amino acid sequence of *H. pylori* polypeptide HPP290 (290A) (SEQ ID NO:673) and the nucleic acid sequence HPP290B (206B) (SEQ ID NO:206) which encodes HPP290;

Figure 291A contains the amino acid sequence of *H. pylori* polypeptide HPP291 (291A) (SEQ ID NO:674);

Figures 292A and 207B contain the amino acid sequence of *H. pylori* polypeptide HPP292 (292A) (SEQ ID NO:675) and the nucleic acid sequence HPP292B (207B) (SEQ ID NO:207) which encodes HPP292;

Figures 293A and 208B contain the amino acid sequence of *H. pylori* polypeptide HPP293 (293A) (SEQ ID NO:676) and the nucleic acid sequence HPP293B (208B) (SEQ ID NO:208) which encodes HPP293;

Figure 294A contains the amino acid sequence of *H. pylori* polypeptide HPP294 (294A) (SEQ ID NO:677);

Figures 295A and 209B contain the amino acid sequence of *H. pylori* polypeptide HPP295 (295A) (SEQ ID NO:678) and the nucleic acid sequence HPP295B (209B) (SEQ ID NO:209) which encodes HPP295;

Figure 296A contains the amino acid sequence of *H. pylori* polypeptide HPP296 (296A) (SEQ ID NO:679);

Figures 297A and 210B contain the amino acid sequence of *H. pylori* polypeptide HPP297 (297A) (SEQ ID NO:680) and the nucleic acid sequence HPP297B (210B) (SEQ ID NO:210) which encodes HPP297;

Figures 298A and 211B contain the amino acid sequence of *H. pylori* polypeptide HPP298 (298A) (SEQ ID NO:681) and the nucleic acid sequence HPP298B (211B) (SEQ ID NO:211) which encodes HPP298;

Figures 299A and 212B contain the amino acid sequence of *H. pylori* polypeptide HPP299 (299A) (SEQ ID NO:682) and the nucleic acid sequence HPP299B (212B) (SEQ ID NO:212) which encodes HPP299;

Figures 300A and 213B contain the amino acid sequence of *H. pylori* polypeptide HPP300 (300A) (SEQ ID NO:683) and the nucleic acid sequence HPP300B (213B) (SEQ ID NO:213) which encodes HPP300;

Figure 301A contains the amino acid sequence of *H. pylori* polypeptide HPP301 (301A) (SEQ ID NO:684);

Figures 302A and 214B contain the amino acid sequence of *H. pylori* polypeptide HPP302 (302A) (SEQ ID NO: 685) and the nucleic acid sequence HPP302B (214B) (SEQ ID NO:214) which encodes HPP302;

Figures 303A and 215B contain the amino acid sequence of *H. pylori* polypeptide HPP303 (303A) (SEQ ID NO:686) and the nucleic acid sequence HPP303B (215B) (SEQ ID NO:215) which encodes HPP303;

Figures 304A and 216B contain the amino acid sequence of *H. pylori* polypeptide HPP304 (304A) (SEQ ID NO:687) and the nucleic acid sequence HPP304B (216B) (SEQ ID NO:216) which encodes HPP304;

Figures 305A and 217B contain the amino acid sequence of *H. pylori* polypeptide HPP305 (305A) (SEQ ID NO:688) and the nucleic acid sequence HPP305B (217B) (SEQ ID NO:217) which encodes HPP305;

Figures 306A and 218B contain the amino acid sequence of *H. pylori* polypeptide HPP306 (306A) (SEQ ID NO:689) and the nucleic acid sequence HPP306B (218B) (SEQ ID NO:218) which encodes HPP306;

Figure 307A contains the amino acid sequence of *H. pylori* polypeptide HPP307 (307A) (SEQ ID NO:690);

Figures 308A and 219B contain the amino acid sequence of *H. pylori* polypeptide HPP308 (308A) (SEQ ID NO:691) and the nucleic acid sequence HPP308B (219B) (SEQ ID NO:219) which encodes HPP308;

Figures 309A and 220B contain the amino acid sequence of *H. pylori* polypeptide HPP309 (309A) (SEQ ID NO:692) and the nucleic acid sequence HPP309B (220B) (SEQ ID NO:220) which encodes HPP309;.

Figures 310A and 221B contain the amino acid sequence of *H. pylori* polypeptide HPP310 (310A) (SEQ ID NO:693) and the nucleic acid sequence HPP310B (221B) (SEQ ID NO:221) which encodes HPP310;

Figures 311A and 222B contain the amino acid sequence of *H. pylori* polypeptide HPP311 (311A) (SEQ ID NO:694) and the nucleic acid sequence HPP311B (222B) (SEQ ID NO:222) which encodes HPP311;

Figures 312A and 223B contain the amino acid sequence of *H. pylori* polypeptide HPP312 (312A) (SEQ ID NO:695) and the nucleic acid sequence HPP312B (223B) (SEQ ID NO:223) which encodes HPP312;

Figures 313A and 224B contain the amino acid sequence of *H. pylori* polypeptide HPP313 (313A) (SEQ ID NO:696) and the nucleic acid sequence HPP313B (224B) (SEQ ID NO:224) which encodes HPP313;

Figures 314A and 225B contain the amino acid sequence of *H. pylori* polypeptide HPP314 (314A) (SEQ ID NO:697) and the nucleic acid sequence HPP314B (225B) (SEQ ID NO:225) which encodes HPP314;

Figures 315A and 226B contain the amino acid sequence of *H. pylori* polypeptide HPP315 (315A) (SEQ ID NO:698) and the nucleic acid sequence HPP315B (226B) (SEQ ID NO:226) which encodes HPP315;

Figure 316A contains the amino acid sequence of *H. pylori* polypeptide HPP316 (316A) (SEQ ID NO:699);

Figure 317A contains the amino acid sequence of *H. pylori* polypeptide HPP317 (317A) (SEQ ID NO:700);

Figures 318A and 227B contain the amino acid sequence of *H. pylori* polypeptide HPP318 (318A) (SEQ ID NO:701) and the nucleic acid sequence HPP318B (227B) (SEQ ID NO:227) which encodes HPP318;

Figures 319A and 228B contain the amino acid sequence of *H. pylori* polypeptide HPP319 (319A) (SEQ ID NO:702) and the nucleic acid sequence HPP319B (228B) (SEQ ID NO:228) which encodes HPP319;

Figure 320A contains the amino acid sequence of *H. pylori* polypeptide HPP320 (320A) (SEQ ID NO:703);

Figures 321A and 229B contain the amino acid sequence of *H. pylori* polypeptide HPP321 (321A) (SEQ ID NO:704) and the nucleic acid sequence HPP321B (229B) (SEQ ID NO:229) which encodes HPP321;

Figure 322A contains the amino acid sequence of *H. pylori* polypeptide HPP322 (322A) (SEQ ID NO:705);

Figures 323A and 230B contain the amino acid sequence of *H. pylori* polypeptide HPP323 (323A) (SEQ ID NO:706) and the nucleic acid sequence HPP323B (230B) (SEQ ID NO:230) which encodes HPP323;

Figures 324A and 231B contain the amino acid sequence of *H. pylori* polypeptide HPP324 (324A) (SEQ ID NO:707) and the nucleic acid sequence HPP324B (231B) (SEQ ID NO:231) which encodes HPP324;

Figures 325A and 232B contain the amino acid sequence of *H. pylori* polypeptide HPP325 (325A) (SEQ ID NO:708) and the nucleic acid sequence HPP325B (232B) (SEQ ID NO:232) which encodes HPP325;

Figures 326A and 233B contain the amino acid sequence of *H. pylori* polypeptide HPP326 (326A) (SEQ ID NO:709) and the nucleic acid sequence HPP326B (233B) (SEQ ID NO:233) which encodes HPP326;

Figures 327A and 234B contain the amino acid sequence of *H. pylori* polypeptide HPP327 (327A) (SEQ ID NO:710) and the nucleic acid sequence HPP327B (234B) (SEQ ID NO:234) which encodes HPP327;

Figure 328A contains the amino acid sequence of *H. pylori* polypeptide HPP328 (328A) (SEQ ID NO:711);

Figure 329A contains the amino acid sequence of *H. pylori* polypeptide HPP329 (329A) (SEQ ID NO:712);

Figures 330A and 235B contain the amino acid sequence of *H. pylori* polypeptide HPP330 (330A) (SEQ ID NO:713) and the nucleic acid sequence HPP330B (235B) (SEQ ID NO:235) which encodes HPP330;

Figure 331A contains the amino acid sequence of *H. pylori* polypeptide HPP331 (331A) (SEQ ID NO:714);

Figure 332A contains the amino acid sequence of *H. pylori* polypeptide HPP332 (332A) (SEQ ID NO:715);

Figure 333A contains the amino acid sequence of *H. pylori* polypeptide HPP333 (333A) (SEQ ID NO:716);

Figure 334A contains the amino acid sequence of *H. pylori* polypeptide HPP334 (334A) (SEQ ID NO:717);

Figures 335A and 236B contain the amino acid sequence of *H. pylori* polypeptide HPP335 (335A) (SEQ ID NO:718) and the nucleic acid sequence HPP335B (236B) (SEQ ID NO:236) which encodes HPP335;

Figures 336A and 237B contain the amino acid sequence of *H. pylori* polypeptide HPP336 (336A) (SEQ ID NO:719) and the nucleic acid sequence HPP336B (237B) (SEQ ID NO:237) which encodes HPP336;

Figures 337A and 238B contain the amino acid sequence of *H. pylori* polypeptide HPP337 (337A) (SEQ ID NO: 720) and the nucleic acid sequence HPP337B (238B) (SEQ ID NO:238) which encodes HPP337;

Figures 338A and 239B contain the amino acid sequence of *H. pylori* polypeptide HPP338 (338A) (SEQ ID NO:721) and the nucleic acid sequence HPP338B (239B) (SEQ ID NO:239) which encodes HPP338;

Figure 339A contains the amino acid sequence of *H. pylori* polypeptide HPP339 (339A) (SEQ ID NO:722);

Figure 340A contains the amino acid sequence of *H. pylori* polypeptide HPP340 (340A) (SEQ ID NO:723);

Figures 341A and 240B contain the amino acid sequence of *H. pylori* polypeptide HPP341 (341A) (SEQ ID NO:724) and the nucleic acid sequence HPP341B (240B) (SEQ ID NO:240) which encodes HPP341;

Figures 342A and 241B contain the amino acid sequence of *H. pylori* polypeptide HPP342 (342A) (SEQ ID NO:725) and the nucleic acid sequence HPP342B (241B) (SEQ ID NO:241) which encodes HPP342;

Figure 343A contains the amino acid sequence of *H. pylori* polypeptide HPP343 (343A) (SEQ ID NO:726);

Figure 344A contains the amino acid sequence of *H. pylori* polypeptide HPP344 (344A) (SEQ ID NO: 727);

Figures 345A and 242B contain the amino acid sequence of *H. pylori* polypeptide HPP345 (345A) (SEQ ID NO:728) and the nucleic acid sequence HPP345B (242B) (SEQ ID NO:242) which encodes HPP345;

Figures 346A and 243B contain the amino acid sequence of *H. pylori* polypeptide HPP346 (346A) (SEQ ID NO:729) and the nucleic acid sequence HPP346B (243B) (SEQ ID NO:243) which encodes HPP346;

Figures 347A and 244B contain the amino acid sequence of *H. pylori* polypeptide HPP347 (347A) (SEQ ID NO:730) and the nucleic acid sequence HPP347B (244B) (SEQ ID NO:244) which encodes HPP347;

Figures 348A contains the amino acid sequence of *H. pylori* polypeptide HPP348 (348A) (SEQ ID NO:731);

Figures 349A and 245B contain the amino acid sequence of *H. pylori* polypeptide HPP349 (349A) (SEQ ID NO:732) and the nucleic acid sequence HPP349B (245B) (SEQ ID NO:245) which encodes HPP349;

Figures 350A and 246B contain the amino acid sequence of *H. pylori* polypeptide HPP350 (350A) (SEQ ID NO:733) and the nucleic acid sequence HPP350B (246B) (SEQ ID NO:246) which encodes HPP350;

Figure 351A contains the amino acid sequence of *H. pylori* polypeptide HPP351 (351A) (SEQ ID NO:734);

Figures 352A and 247B contain the amino acid sequence of *H. pylori* polypeptide HPP352 (352A) (SEQ ID NO:735) and the nucleic acid sequence HPP352B (247B) (SEQ ID NO:247) which encodes HPP352;

Figures 353A and 248B contain the amino acid sequence of *H. pylori* polypeptide HPP353 (353A) (SEQ ID NO:736) and the nucleic acid sequence HPP353 (248B) (SEQ ID NO:248) which encodes HPP353;

Figures 354A and 249B contain the amino acid sequence of *H. pylori* polypeptide HPP354 (354A) (SEQ ID NO:737) and the nucleic acid sequence HPP354B (249B) (SEQ ID NO:249) which encodes HPP354;

Figures 355A and 250B contain the amino acid sequence of *H. pylori* polypeptide HPP355 (355A) (SEQ ID NO:738) and the nucleic acid sequence HPP355B (250B) (SEQ ID NO:250) which encodes HPP355;

Figure 356A contains the amino acid sequence of *H. pylori* polypeptide HPP356 (356A) (SEQ ID NO:739);

Figure 357A contains the amino acid sequence of *H. pylori* polypeptide HPP357 (357A) (SEQ ID NO:740);

Figure 358A contains the amino acid sequence of *H. pylori* polypeptide HPP358 (358A) (SEQ ID NO:741);

Figures 359A and 251B contain the amino acid sequence of *H. pylori* polypeptide HPP359 (359A) (SEQ ID NO:742) and the nucleic acid sequence HPP359B (251B) (SEQ ID NO:251) which encodes HPP359;

Figures 360A and 252B contain the amino acid sequence of *H. pylori* polypeptide HPP360 (360A) (SEQ ID NO:743) and the nucleic acid sequence HPP360B (252B) (SEQ ID NO:252) which encodes HPP360;

Figures 361A and 253B contain the amino acid sequence of *H. pylori* polypeptide HPP361 (361A) (SEQ ID NO:744) and the nucleic acid sequence HPP361B (253B) (SEQ ID NO:253) which encodes HPP361;

Figures 362A and 254B contain the amino acid sequence of *H. pylori* polypeptide HPP362 (362A) (SEQ ID NO:745) and the nucleic acid sequence HPP362B (254B) (SEQ ID NO:254) which encodes HPP362;

Figure 363A contains the amino acid sequence of *H. pylori* polypeptide HPP363 (363A) (SEQ ID NO:746);

Figure 364A contains the amino acid sequence of *H. pylori* polypeptide HPP364 (364A) (SEQ ID NO:747);

Figure 365A contains the amino acid sequence of *H. pylori* polypeptide HPP365 (365A) (SEQ ID NO:748);

Figure 366A contains the amino acid sequence of *H. pylori* polypeptide HPP366 (366A) (SEQ ID NO:749);

Figures 367A and 255B contain the amino acid sequence of *H. pylori* polypeptide HPP367 (367A) (SEQ ID NO:750) and the nucleic acid sequence HPP367B (255B) (SEQ ID NO:255) which encodes HPP367;

Figures 368A and 256B contain the amino acid sequence of *H. pylori* polypeptide HPP368 (368A) (SEQ ID NO:751) and the nucleic acid sequence HPP368B (256B) (SEQ ID NO:256) which encodes HPP368;

Figures 369A and 257B contain the amino acid sequence of *H. pylori* polypeptide HPP369 (369A) (SEQ ID NO:752) and the nucleic acid sequence HPP369B (257B) (SEQ ID NO:257) which encodes HPP369;

Figures 370A contains the amino acid sequence of *H. pylori* polypeptide HPP370 (370A) (SEQ ID NO:753);

Figure 371A contains the amino acid sequence of *H. pylori* polypeptide HPP371 (371A) (SEQ ID NO:754);

Figures 372A and 258B contain the amino acid sequence of *H. pylori* polypeptide HPP372 (372A) (SEQ ID NO:755) and the nucleic acid sequence HPP372B (258B) (SEQ ID NO:258) which encodes HPP372;

Figures 373A and 259B contain the amino acid sequence of *H. pylori* polypeptide HPP373 (373A) (SEQ ID NO:756) and the nucleic acid sequence HPP373B (259B) (SEQ ID NO:259) which encodes HPP373;

Figure 374A contains the amino acid sequence of *H. pylori* polypeptide HPP374 (374A) (SEQ ID NO:757);

Figures 375A and 260B contain the amino acid sequence of *H. pylori* polypeptide HPP375 (375A) (SEQ ID NO:758) and the nucleic acid sequence HPP375B (260B) (SEQ ID NO:260) which encodes HPP375;

Figures 376A and 261B contain the amino acid sequence of *H. pylori* polypeptide HPP376 (376A) (SEQ ID NO:759) and the nucleic acid sequence HPP376B (261B) (SEQ ID NO:261) which encodes HPP376;

Figures 377A and 262B contain the amino acid sequence of *H. pylori* polypeptide HPP377 (377A) (SEQ ID NO:760) and the nucleic acid sequence HPP377B (262B) (SEQ ID NO:262) which encodes HPP377;

Figures 378A and 263B contain the amino acid sequence of *H. pylori* polypeptide HPP378 (378A) (SEQ ID NO:761) and the nucleic acid sequence HPP378B (263B) (SEQ ID NO:263) which encodes HPP378;

Figures 379A and 264B contain the amino acid sequence of *H. pylori* polypeptide HPP379 (379A) (SEQ ID NO:762) and the nucleic acid sequence HPP379B (264B) (SEQ ID NO:264) which encodes HPP379;

Figure 380A contains the amino acid sequence of *H. pylori* polypeptide HPP380 (380A) (SEQ ID NO:763);

Figure 381A contains the amino acid sequence of *H. pylori* polypeptide HPP381 (381A) (SEQ ID NO:764);

Figures 382A and 265B contain the amino acid sequence of *H. pylori* polypeptide HPP382 (382A) (SEQ ID NO:765) and the nucleic acid sequence HPP382B (265B) (SEQ ID NO:265) which encodes HPP382;

Figures 383A and 266B contain the amino acid sequence of *H. pylori* polypeptide HPP383 (383A) (SEQ ID NO:766) and the nucleic acid sequence HPP383B (266B) (SEQ ID NO:266) which encodes HPP383;

Figures 384A and 267B contain the amino acid sequence of *H. pylori* polypeptide HPP384 (384A) (SEQ ID NO:767) and the nucleic acid sequence HPP383B (267B) (SEQ ID NO:267) which encodes HPP384;

Figures 385A and 268B contain the amino acid sequence of *H. pylori* polypeptide HPP385 (385A) (SEQ ID NO:768) and the nucleic acid sequence HPP385B (268B) (SEQ ID NO:268) which encodes HPP385;

Figures 386A and 269B contain the amino acid sequence of *H. pylori* polypeptide HPP386 (386A) (SEQ ID NO:769) and the nucleic acid sequence HPP386B (269B) (SEQ ID NO:269) which encodes HPP386;

Figures 387A and 270B contain the amino acid sequence of *H. pylori* polypeptide HPP387 (387A) (SEQ ID NO:770) and the nucleic acid sequence HPP387B (270B) (SEQ ID NO:270) which encodes HPP387;

Figure 388A contains the amino acid sequence of *H. pylori* polypeptide HPP388 (388A) (SEQ ID NO:771);

Figures 389A and 271B contain the amino acid sequence of *H. pylori* polypeptide HPP389 (389A) (SEQ ID NO:772) and the nucleic acid sequence HPP389B (271B) (SEQ ID NO:271) which encodes HPP389;

Figures 390A and 272B contain the amino acid sequence of *H. pylori* polypeptide HPP390 (390A) (SEQ ID NO:773) and the nucleic acid sequence HPP390B (272B) (SEQ ID NO:272) which encodes HPP390;

Figure 391A contains the amino acid sequence of *H. pylori* polypeptide HPP391 (391A) (SEQ ID NO:774);

Figures 392A contains the amino acid sequence of *H. pylori* polypeptide HPP392 (392A) (SEQ ID NO:775);

Figures 393A and 273B contain the amino acid sequence of *H. pylori* polypeptide HPP393 (393A) (SEQ ID NO:776) and the nucleic acid sequence HPP393B (273B) (SEQ ID NO:273) which encodes HPP393;

Figures 394A and 274B contain the amino acid sequence of *H. pylori* polypeptide HPP394 (394A) (SEQ ID NO:777) and the nucleic acid sequence HPP394B (274B) (SEQ ID NO:274) which encodes HPP394;

Figures 395A and 275B contain the amino acid sequence of *H. pylori* polypeptide HPP395 (395A) (SEQ ID NO:778) and the nucleic acid sequence HPP395B (275B) (SEQ ID NO:275) which encodes HPP395;

Figure 396A contains the amino acid sequence of *H. pylori* polypeptide HPP396 (396A) (SEQ ID NO:779);

Figure 397A contains the amino acid sequence of *H. pylori* polypeptide HPP397 (397A) (SEQ ID NO:780);

Figures 398A and 276B contain the amino acid sequence of *H. pylori* polypeptide HPP398 (398A) (SEQ ID NO:781) and the nucleic acid sequence HPP398B (276B) (SEQ ID NO:276) which encodes HPP398;

Figures 399A and 277B contain the amino acid sequence of *H. pylori* polypeptide HPP399 (399A) (SEQ ID NO:782) and the nucleic acid sequence HPP399B (277B) (SEQ ID NO:277) which encodes HPP399;

Figure 400A contains the amino acid sequence of *H. pylori* polypeptide HPP400 (400A) (SEQ ID NO:783);

Figures 401A and 278B contain the amino acid sequence of *H. pylori* polypeptide HPP401 (401A) (SEQ ID NO:785) and the nucleic acid sequence HPP401B (278B) (SEQ ID NO:278) which encodes HPP401;

Figures 402A and 279B contain the amino acid sequence of *H. pylori* polypeptide HPP402 (402A) (SEQ ID NO:785) and the nucleic acid sequence HPP402B (279B) (SEQ ID NO:279) which encodes HPP402;

Figures 403A and 280B contain the amino acid sequence of *H. pylori* polypeptide HPP403 (403A) (SEQ ID NO:786) and the nucleic acid sequence HPP403B (280B) (SEQ ID NO:280) which encodes HPP403;

Figures 404A and 281B contain the amino acid sequence of *H. pylori* polypeptide HPP404 (404A) (SEQ ID NO:787) and the nucleic acid sequence HPP404B (281B) (SEQ ID NO:281) which encodes HPP404;

Figures 405A and 282B contain the amino acid sequence of *H. pylori* polypeptide HPP405 (405A) (SEQ ID NO:788) and the nucleic acid sequence HPP405B (282B) (SEQ ID NO:282) which encodes HPP405;

Figure 406A contains the amino acid sequence of *H. pylori* polypeptide HPP406 (406A) (SEQ ID NO:789);

Figures 407A and 283B contain the amino acid sequence of *H. pylori* polypeptide HPP407 (407A) (SEQ ID NO:790) and the nucleic acid sequence HPP407B (283B) (SEQ ID NO:283) which encodes HPP407;

Figure 408A contains the amino acid sequence of *H. pylori* polypeptide HPP408 (408A) (SEQ ID NO:791);

Figures 409A and 284B contain the amino acid sequence of *H. pylori* polypeptide HPP409 (409A) (SEQ ID NO:792) and the nucleic acid sequence HPP409B (284B) (SEQ ID NO:284) which encodes HPP409;

Figures 410A and 285B contain the amino acid sequence of *H. pylori* polypeptide HPP410 (410A) (SEQ ID NO:793) and the nucleic acid sequence HPP410B (285B) (SEQ ID NO:285) which encodes HPP410;

Figures 411A and 286B contain the amino acid sequence of *H. pylori* polypeptide HPP411 (411A) (SEQ ID NO:794) and the nucleic acid sequence HPP411B (286B) (SEQ ID NO:286) which encodes HPP411;

Figures 412A and 287B contain the amino acid sequence of *H. pylori* polypeptide HPP412 (412A) (SEQ ID NO:795) and the nucleic acid sequence HPP412B (287B) (SEQ ID NO:287) which encodes HPP412;

Figures 413A and 288B contain the amino acid sequence of *H. pylori* polypeptide HPP413 (413A) (SEQ ID NO:796) and the nucleic acid sequence HPP413B (288B) (SEQ ID NO:288) which encodes HPP413;

Figures 414A and 289B contain the amino acid sequence of *H. pylori* polypeptide HPP414 (414A) (SEQ ID NO:797) and the nucleic acid sequence HPP414B (289B) (SEQ ID NO:289) which encodes HPP414;

Figure 415A contains the amino acid sequence of *H. pylori* polypeptide HPP415 (415A) (SEQ ID NO:798);

Figure 416A contains the amino acid sequence of *H. pylori* polypeptide HPP416 (416A) (SEQ ID NO: 799);

Figures 417A and 290B contain the amino acid sequence of *H. pylori* polypeptide HPP417 (417A) (SEQ ID NO:800) and the nucleic acid sequence HPP417B (290B) (SEQ ID NO:290) which encodes HPP417;

Figures 418A and 291B contain the amino acid sequence of *H. pylori* polypeptide HPP418 (418A) (SEQ ID NO:801) and the nucleic acid sequence HPP418B (291B) (SEQ ID NO:291) which encodes HPP418;

Figures 419A and 292B contain the amino acid sequence of *H. pylori* polypeptide HPP419 (419A) (SEQ ID NO:802) and the nucleic acid sequence HPP419B (292B) (SEQ ID NO:292) which encodes HPP419;

Figure 420A contains the amino acid sequence of *H. pylori* polypeptide HPP420 (420A) (SEQ ID NO:803);

Figures 421A and 293B contain the amino acid sequence of *H. pylori* polypeptide HPP421 (421A) (SEQ ID NO:804) and the nucleic acid sequence HPP421B (293B) (SEQ ID NO:293) which encodes HPP421;

Figure 422A contains the amino acid sequence of *H. pylori* polypeptide HPP422 (422A) (SEQ ID NO:805);

Figures 423A and 294B contain the amino acid sequence of *H. pylori* polypeptide HPP423 (423A) (SEQ ID NO:806) and the nucleic acid sequence HPP423B (294B) (SEQ ID NO:294) which encodes HPP423;

Figures 424A and 295B contain the amino acid sequence of *H. pylori* polypeptide HPP424A (424A) (SEQ ID NO:807) and the nucleic acid sequence HPP424B (295B) (SEQ ID NO:295) which encodes HPP424;

Figures 425A and 296B contain the amino acid sequence of *H. pylori* polypeptide HPP425 (425A) (SEQ ID NO:808) and the nucleic acid sequence HPP425B (296B) (SEQ ID NO:296) which encodes HPP425;

Figure 426A contains the amino acid sequence of *H. pylori* polypeptide HPP426A (426A) (SEQ ID NO:809);

Figure 427A contains the amino acid sequence of *H. pylori* polypeptide HPP427 (427A) (SEQ ID NO:810);

Figure 428A contains the amino acid sequence of *H. pylori* polypeptide HPP428 (428A) (SEQ ID NO:811);

Figures 429A and 297B contain the amino acid sequence of *H. pylori* polypeptide HPP429 (429A) (SEQ ID NO:812) and the nucleic acid sequence HPP429B (297B) (SEQ ID NO:297) which encodes HPP429;

Figures 430A and 298B contain the amino acid sequence of *H. pylori* polypeptide HPP430 (430A) (SEQ ID NO:813) and the nucleic acid sequence HPP430B (298B) (SEQ ID NO:298) which encodes HPP430;

Figures 431A and 299B contain the amino acid sequence of *H. pylori* polypeptide HPP431 (431A) (SEQ ID NO:814) and the nucleic acid sequence HPP431B (299B) (SEQ ID NO:299) which encodes HPP431;

Figure 432A contains the amino acid sequence of *H. pylori* polypeptide HPP432 (432A) (SEQ ID NO:815);

Figures 433A and 300B contain the amino acid sequence of *H. pylori* polypeptide HPP433 (433A) (SEQ ID NO:816) and the nucleic acid sequence HPP433B (300B) (SEQ ID NO:300) which encodes HPP433;

Figures 434A and 301B contain the amino acid sequence of *H. pylori* polypeptide HPP434 (434A) (SEQ ID NO:817) and the nucleic acid sequence HPP434B (301B) (SEQ ID NO:301) which encodes HPP434;

Figures 435A and 302B contain the amino acid sequence of *H. pylori* polypeptide HPP435 (435A) (SEQ ID NO:818) and the nucleic acid sequence HPP435B (302B) (SEQ ID NO:302) which encodes HPP435;

Figures 436A and 303B contain the amino acid sequence of *H. pylori* polypeptide HPP436 (436A) (SEQ ID NO:819) and the nucleic acid sequence HPP436B (303B) (SEQ ID NO:303) which encodes HPP436;

Figure 437A contains the amino acid sequence of *H. pylori* polypeptide HPP437 (437A) (SEQ ID NO:820);

Figures 438A and 304B contain the amino acid sequence of *H. pylori* polypeptide HPP438 (438A) (SEQ ID NO:821) and the nucleic acid sequence HPP438B (304B) (SEQ ID NO:304) which encodes HPP438;

Figure 439A contains the amino acid sequence of *H. pylori* polypeptide HPP439 (439A) (SEQ ID NO:822);

Figures 440A and 305B contain the amino acid sequence of *H. pylori* polypeptide HPP440 (440A) (SEQ ID NO:823) and the nucleic acid sequence HPP440B (305B) (SEQ ID NO:305) which encodes HPP440;

Figure 441A contains the amino acid sequence of *H. pylori* polypeptide HPP441 (441A) (SEQ ID NO:824);

Figures 442A and 306B contain the amino acid sequence of *H. pylori* polypeptide HPP442 (442A) (SEQ ID NO:825) and the nucleic acid sequence HPP442B (306B) (SEQ ID NO:306) which encodes HPP442;

Figures 443A and 307B contain the amino acid sequence of *H. pylori* polypeptide HPP443 (443A) (SEQ ID NO:826) and the nucleic acid sequence HPP443B (307B) (SEQ ID NO:307) which encodes HPP443;

Figures 444A and 308B contain the amino acid sequence of *H. pylori* polypeptide HPP444 (444A) (SEQ ID NO:827) and the nucleic acid sequence HPP444B (308B) (SEQ ID NO:308) which encodes HPP444;

Figures 445A and 309B contain the amino acid sequence of *H. pylori* polypeptide HPP445 (445A) (SEQ ID NO:828) and the nucleic acid sequence HPP445B (309B) (SEQ ID NO:309) which encodes HPP445;

Figures 446A and 310B contain the amino acid sequence of *H. pylori* polypeptide HPP446 (446A) (SEQ ID NO: 829) and the nucleic acid sequence HPP446B (310B) (SEQ ID NO:310) which encodes HPP446;

Figures 447A and 311B contain the amino acid sequence of *H. pylori* polypeptide HPP447 (447A) (SEQ ID NO:830) and the nucleic acid sequence HPP447B (311B) (SEQ ID NO:311) which encodes HPP447;

Figure 448A contains the amino acid sequence of *H. pylori* polypeptide HPP448 (448A) (SEQ ID NO:831);

Figure 449A contains the amino acid sequence of *H. pylori* polypeptide HPP449 (449A) (SEQ ID NO:832);

Figures 450A and 312B contain the amino acid sequence of *H. pylori* polypeptide HPP450 (450A) (SEQ ID NO:833) and the nucleic acid sequence HPP450B (312B) (SEQ ID NO:312) which encodes HPP450;

Figures 451A and 313B contain the amino acid sequence of *H. pylori* polypeptide HPP451 (451A) (SEQ ID NO:834) and the nucleic acid sequence HPP451B (313B) (SEQ ID NO:313) which encodes HPP451;

Figure 452A contains the amino acid sequence of *H. pylori* polypeptide HPP452 (452A) (SEQ ID NO:835);

Figures 453A and 314B contain the amino acid sequence of *H. pylori* polypeptide HPP453 (453A) (SEQ ID NO:836) and the nucleic acid sequence HPP453B (314B) (SEQ ID NO:314) which encodes HPP453;

Figures 454A and 315B contain the amino acid sequence of *H. pylori* polypeptide HPP454 (454A) (SEQ ID NO:837) and the nucleic acid sequence HPP454B (315B) (SEQ ID NO:315) which encodes HPP454;

Figures 455A and 316B contain the amino acid sequence of *H. pylori* polypeptide HPP455 (455A) (SEQ ID NO:838) and the nucleic acid sequence HPP455B (316B) (SEQ ID NO:316) which encodes HPP455;

Figures 456A and 317B contain the amino acid sequence of *H. pylori* polypeptide HPP456 (456A) (SEQ ID NO:839) and the nucleic acid sequence HPP456B (317B) (SEQ ID NO:317) which encodes HPP456;

Figure 457A contains the amino acid sequence of *H. pylori* polypeptide HPP457 (457A) (SEQ ID NO:840);

Figures 458A and 318B contain the amino acid sequence of *H. pylori* polypeptide HPP458 (458A) (SEQ ID NO:841) and the nucleic acid sequence HPP458B (318B) (SEQ ID NO:318) which encodes HPP458;

Figure 459A contains the amino acid sequence of *H. pylori* polypeptide HPP459 (459A) (SEQ ID NO:842);

Figures 460A and 319B contain the amino acid sequence of *H. pylori* polypeptide HPP460 (460A) (SEQ ID NO:843) and the nucleic acid sequence HPP460B (319B) (SEQ ID NO:319) which encodes HPP460;

Figure 461A contains the amino acid sequence of *H. pylori* polypeptide HPP461 (461A) (SEQ ID NO:844);

Figures 462A and 320B contain the amino acid sequence of *H. pylori* polypeptide HPP462 (462A) (SEQ ID NO:845) and the nucleic acid sequence HPP462B (320B) (SEQ ID NO:320) which encodes HPP462;

Figures 463A and 321B contain the amino acid sequence of *H. pylori* polypeptide HPP463 (463A) (SEQ ID NO:846) and the nucleic acid sequence HPP463B (321B) (SEQ ID NO:321) which encodes HPP463;

Figures 464A and 322B contain the amino acid sequence of *H. pylori* polypeptide HPP464 (464A) (SEQ ID NO:847) and the nucleic acid sequence HPP464B (322B) (SEQ ID NO:322) which encodes HPP464;

Figures 465A and 323B contain the amino acid sequence of *H. pylori* polypeptide HPP465 (465A) (SEQ ID NO:848) and the nucleic acid sequence HPP465B (323B) (SEQ ID NO:323) which encodes HPP465;

Figure 466A contains the amino acid sequence of *H. pylori* polypeptide HPP466 (466A) (SEQ IOD NO:849);

Figures 467A and 324B contain the amino acid sequence of *H. pylori* polypeptide HPP467 (467A) (SEQ ID NO:850) and the nucleic acid sequence HPP467B (324B) (SEQ ID NO:324) which encodes HPP467;

Figures 468A and 325B contain the amino acid sequence of *H. pylori* polypeptide HPP468 (468A) (SEQ ID NO:851) and the nucleic acid sequence HPP468B (325B) (SEQ ID NO:325) which encodes HPP468;

Figures 469A and 326B contain the amino acid sequence of *H. pylori* polypeptide HPP469 (469A) (SEQ ID NO:852) and the nucleic acid sequence HPP469B (326B) (SEQ ID NO:326) which encodes HPP469;

Figures 470A and 327B contain the amino acid sequence of *H. pylori* polypeptide HPP470 (470A) (SEQ ID NO:853) and the nucleic acid sequence HPP470B (327B) (SEQ ID NO:327) which encodes HPP470;

Figure 471A contains the amino acid sequence of *H. pylori* polypeptide HPP471 (471A) (SEQ ID NO:854);

Figures 472A and 328B contain the amino acid sequence of *H. pylori* polypeptide HPP472 (472A) (SEQ ID NO:855) and the nucleic acid sequence HPP472B (328B) (SEQ ID NO:328) which encodes HPP472;

Figures 473A and 329B contain the amino acid sequence of *H. pylori* polypeptide HPP473 (473A) (SEQ ID NO:856) and the nucleic acid sequence HPP473B (329B) (SEQ ID NO:329) which encodes HPP473;

Figures 474A and 330B contain the amino acid sequence of *H. pylori* polypeptide HPP474 (474A) (SEQ ID NO:857) and the nucleic acid sequence HPP474B (330B) (SEQ ID NO:330) which encodes HPP474;

Figures 475A and 331B contain the amino acid sequence of *H. pylori* polypeptide HPP475 (475A) (SEQ ID NO:858) and the nucleic acid sequence HPP475B (331B) (SEQ ID NO:331) which encodes HPP475;

Figures 476A and 332B contain the amino acid sequence of *H. pylori* polypeptide HPP476 (476A) (SEQ ID NO:859) and the nucleic acid sequence HPP476B (332B) (SEQ ID NO:332) which encodes HPP476;

Figure 477A contains the amino acid sequence of *H. pylori* polypeptide HPP477 (477A) (SEQ ID NO:860);

Figures 478A and 333B contain the amino acid sequence of *H. pylori* polypeptide HPP478 (478A) (SEQ ID NO:861) and the nucleic acid sequence HPP478B (333B) (SEQ ID NO:333) which encodes HPP478;

Figures 479A and 334B contain the amino acid sequence of *H. pylori* polypeptide HPP479 (479A) (SEQ ID NO:862) and the nucleic acid sequence HPP479B (334B) (SEQ ID NO:334) which encodes HPP479;

Figure 480A contains the amino acid sequence of *H. pylori* polypeptide HPP480 (480A) (SEQ ID NO:863);

Figures 481A and 335 contain the amino acid sequence of *H. pylori* polypeptide HPP481 (481A) (SEQ ID NO:864) and the nucleic acid sequence HPP481B (335B) (SEQ ID NO:335) which encodes HPP481;

Figures 482A and 336B contain the amino acid sequence of *H. pylori* polypeptide HPP482 (482A) (SEQ ID NO:865) and the nucleic acid sequence HPP482B (336B) (SEQ ID NO:336) which encodes HPP482;

Figures 483A and 337B contain the amino acid sequence of *H. pylori* polypeptide HPP483 (483A) (SEQ ID NO:866) and the nucleic acid sequence HPP483B (337B) (SEQ ID NO:337) which encodes HPP483;

Figures 484A and 338B contain the amino acid sequence of *H. pylori* polypeptide HPP484 (484A) (SEQ ID NO:867) and the nucleic acid sequence HPP484B (338B) (SEQ ID NO:338) which encodes HPP484;

Figures 485A and 339B contain the amino acid sequence of *H. pylori* polypeptide HPP485 (485A) (SEQ ID NO:868) and the nucleic acid sequence HPP485B (339B) (SEQ ID NO:339) which encodes HPP485;

Figure 486A contains the amino acid sequence of *H. pylori* polypeptide HPP486 (486A) (SEQ ID NO:869);

Figures 487A and 340B contain the amino acid sequence of *H. pylori* polypeptide HPP487 (487A) (SEQ ID NO:870) and the nucleic acid sequence HPP487B (340B) (SEQ ID NO:340) which encodes HPP487;

Figures 488A and 341B contain the amino acid sequence of *H. pylori* polypeptide HPP488 (488A) (SEQ ID NO:871) and the nucleic acid sequence HPP488B (341B) (SEQ ID NO:341) which encodes HPP488;

Figure 489A contains the amino acid sequence of *H. pylori* polypeptide HPP489 (489A) (SEQ ID NO:872);

Figures 490A and 342B contain the amino acid sequence of *H. pylori* polypeptide HPP490 (490A) (SEQ ID NO:873) and the nucleic acid sequence HPP490B (342B) (SEQ ID NO:342) which encodes HPP490;

Figures 491A and 343B contain the amino acid sequence of *H. pylori* polypeptide HPP491 (491A) (SEQ ID NO:874) and the nucleic acid sequence HPP491B (343B) (SEQ ID NO:343) which encodes HPP491;

Figures 492A and 344B contain the amino acid sequence of *H. pylori* polypeptide HPP492 (492A) (SEQ ID NO:875) and the nucleic acid sequence HPP492B (344B) (SEQ ID NO:344) which encodes HPP492;

Figure 493A contains the amino acid sequence of *H. pylori* polypeptide HPP493 (493A) (SEQ ID NO:876);

Figures 494A and 345B contain the amino acid sequence of *H. pylori* polypeptide HPP494 (494A) (SEQ ID NO:877) and the nucleic acid sequence HPP494B (345B) (SEQ ID NO:345) which encodes HPP494;

Figures 495A and 346B contain the amino acid sequence of *H. pylori* polypeptide HPP495 (495A) (SEQ ID NO:878) and the nucleic acid sequence HPP495B (346B) (SEQ ID NO:346) which encodes HPP495;

Figures 496A and 347B contain the amino acid sequence of *H. pylori* polypeptide HPP496 (496A) (SEQ ID NO:879) and the nucleic acid sequence HPP496B (347B) (SEQ ID NO:347) which encodes HPP496;

Figures 497A and 348B contain the amino acid sequence of *H. pylori* polypeptide HPP497 (497A) (SEQ ID NO:880) and the nucleic acid sequence HPP497B (348B) (SEQ ID NO:348) which encodes HPP497;

Figures 498A and 349B contain the amino acid sequence of *H. pylori* polypeptide HPP498 (498A) (SEQ ID NO:881) and the nucleic acid sequence HPP498B (349B) (SEQ ID NO:349) which encodes HPP498;

Figure 499A contains the amino acid sequence of *H. pylori* polypeptide HPP499 (499A) (SEQ ID NO:882);

Figure 500A contains the amino acid sequence of *H. pylori* polypeptide HPP500 (500A) (SEQ ID NO:883);

Figures 501A and 350B contain the amino acid sequence of *H. pylori* polypeptide HPP501 (501A) (SEQ ID NO:884) and the nucleic acid sequence HPP501B (350B) (SEQ ID NO:350) which encodes HPP501;

Figures 502A and 351B contain the amino acid sequence of *H. pylori* polypeptide HPP502 (502A) (SEQ ID NO:885) and the nucleic acid sequence HPP502B (351B) (SEQ ID NO:351) which encodes HPP502;

Figures 503A and 352B contain the amino acid sequence of *H. pylori* polypeptide HPP503 (503A) (SEQ ID NO:886) and the nucleic acid sequence HPP503B (352B) (SEQ ID NO:352) which encodes HPP503;

Figures 504A and 353B contain the amino acid sequence of *H. pylori* polypeptide HPP504 (504A) (SEQ ID NO:887) and the nucleic acid sequence HPP504B (353B) (SEQ ID NO:353) which encodes HPP504;

Figures 505A and 354B contain the amino acid sequence of *H. pylori* polypeptide HPP505 (505A) (SEQ ID NO:888) and the nucleic acid sequence HPP505B (354B) (SEQ ID NO:354) which encodes HPP505;

Figures 506A and 355B contain the amino acid sequence of *H. pylori* polypeptide HPP506 (506A) (SEQ ID NO:889) and the nucleic acid sequence HPP506B (355B) (SEQ ID NO:355) which encodes HPP506;

Figure 507A contains the amino acid sequence of *H. pylori* polypeptide HPP507 (507A) (SEQ ID NO:890);

Figures 508A and 356B contain the amino acid sequence of *H. pylori* polypeptide HPP508 (508A) (SEQ ID NO:891) and the nucleic acid sequence HPP508B (356B) (SEQ ID NO:356) which encodes HPP508;

Figure 509A contains the amino acid sequence of *H. pylori* polypeptide HPP509 (509A) (SEQ ID NO:892);

Figures 510A and 357B contain the amino acid sequence of *H. pylori* polypeptide HPP510 (510A) (SEQ ID NO:893) and the nucleic acid sequence HPP510B (357B) (SEQ ID NO:357) which encodes HPP510;

Figures 511A and 358B contain the amino acid sequence of *H. pylori* polypeptide HPP511 (511A) (SEQ ID NO:894) and the nucleic acid sequence HPP511B (358B) (SEQ ID NO:358) which encodes HPP511;

Figure 512A contains the amino acid sequence of *H. pylori* polypeptide HPP512 (512A) (SEQ ID NO:895);

Figures 513A and 359B contain the amino acid sequence of *H. pylori* polypeptide HPP513 (513A) (SEQ ID NO:896) and the nucleic acid sequence HPP513B (359B) (SEQ ID NO:359) which encodes HPP513;

Figures 514A and 360B contain the amino acid sequence of *H. pylori* polypeptide HPP514 (514A) (SEQ ID NO:897) and the nucleic acid sequence HPP514B (360B) (SEQ ID NO:360) which encodes HPP514;

Figures 515A and 361B contain the amino acid sequence of *H. pylori* polypeptide HPP515 (515A) (SEQ ID NO:898) and the nucleic acid sequence HPP515B (361B) (SEQ ID NO:361) which encodes HPP515;

Figures 516A and 362B contain the amino acid sequence of *H. pylori* polypeptide HPP516 (516A) (SEQ ID NO:899) and the nucleic acid sequence HPP516B (362B) (SEQ ID NO:362) which encodes HPP516;

Figures 517A and 363B contain the amino acid sequence of *H. pylori* polypeptide HPP517 (517A) (SEQ ID NO:900) and the nucleic acid sequence HPP517B (363B) (SEQ ID NO:363) which encodes HPP517;

Figure 518A contains the amino acid sequence of *H. pylori* polypeptide HPP518 (518A) (SEQ ID NO:901);

Figures 519A and 364B contain the amino acid sequence of *H. pylori* polypeptide HPP519 (519A) (SEQ ID NO:902) and the nucleic acid sequence HPP519B (364B) (SEQ ID NO:364) which encodes HPP519;

Figures 520A and 365B contain the amino acid sequence of *H. pylori* polypeptide HPP520 (520A) (SEQ ID NO:903) and the nucleic acid sequence HPP520B (365B) (SEQ ID NO:365) which encodes HPP520;

Figure 521A contains the amino acid sequence of *H. pylori* polypeptide HPP521 (521A) (SEQ ID NO:904);

Figures 522A and 366B contain the amino acid sequence of *H. pylori* polypeptide HPP522 (522A) (SEQ ID NO: 905) and the nucleic acid sequence HPP522B (366B) (SEQ ID NO:366) which encodes HPP522;

Figure 523A contains the amino acid sequence of *H. pylori* polypeptide HPP523 (523A) (SEQ ID NO:906);

Figure 524A contains the amino acid sequence of *H. pylori* polypeptide HPP524 (524A) (SEQ ID NO:907);

Figures 525A and 367B contain the amino acid sequence of *H. pylori* polypeptide HPP525 (525A) (SEQ ID NO:908) and the nucleic acid sequence HPP525B (367B) (SEQ ID NO:367) which encodes HPP525;

Figure 526A contains the amino acid sequence of *H. pylori* polypeptide HPP526 (526A) (SEQ ID NO:909);

Figures 527A and 368B contain the amino acid sequence of *H. pylori* polypeptide HPP527 (527A) (SEQ ID NO:910) and the nucleic acid sequence HPP527B (368B) (SEQ ID NO:368) which encodes HPP527;

Figures 528A and 369B contain the amino acid sequence of *H. pylori* polypeptide HPP528 (528A) (SEQ ID NO:911) and the nucleic acid sequence HPP528B (369B) (SEQ ID NO:369) which encodes HPP528;

Figure 529A contains the amino acid sequence of *H. pylori* polypeptide HPP529 (529A) (SEQ ID NO:912);

Figure 530A contains the amino acid sequence of *H. pylori* polypeptide HPP530 (530A) (SEQ ID NO:913);

Figure 531A contains the amino acid sequence of *H. pylori* polypeptide HPP531 (531A) (SEQ ID NO:914);

Figures 532A and 370B contain the amino acid sequence of *H. pylori* polypeptide HPP532 (532A) (SEQ ID NO:915) and the nucleic acid sequence HPP532B (370B) (SEQ ID NO:370) which encodes HPP532;

Figures 533A and 371B contain the amino acid sequence of *H. pylori* polypeptide HPP533 (533A) (SEQ ID NO:916) and the nucleic acid sequence HPP533B (371B) (SEQ ID NO:371) which encodes HPP533;

Figures 534A and 372B contain the amino acid sequence of *H. pylori* polypeptide HPP534 (534A) (SEQ ID NO:917) and the nucleic acid sequence HPP534B (372B) (SEQ ID NO:372) which encodes HPP534;

Figures 535A and 373B contain the amino acid sequence of *H. pylori* polypeptide HPP535 (535A) (SEQ ID NO:918) and the nucleic acid sequence HPP535B (373B) (SEQ ID NO:373) which encodes HPP535;

Figure 536A contains the amino acid sequence of *H. pylori* polypeptide HPP536 (536A) (SEQ ID NO:919);

Figure 537A contains the amino acid sequence of *H. pylori* polypeptide HPP537 (537A) (SEQ ID NO:920);

Figure 538A contains the amino acid sequence of *H. pylori* polypeptide HPP538 (538A) (SEQ ID NO:921);

Figure 539A contains the amino acid sequence of *H. pylori* polypeptide HPP539 (539A) (SEQ ID NO:922);

Figure 540A contains the amino acid sequence of *H. pylori* polypeptide HPP540 (540A) (SEQ ID NO:923);

Figures 541A and 374B contain the amino acid sequence of *H. pylori* polypeptide HPP541 (541A) (SEQ ID NO:924) and the nucleic acid sequence HPP541B (374B) (SEQ ID NO:374) which encodes HPP541;

Figure 542A contains the amino acid sequence of *H. pylori* polypeptide HPP542 (542A) (SEQ ID NO:925);

Figures 543A and 375B contain the amino acid sequence of *H. pylori* polypeptide HPP543 (543A) (SEQ ID NO:926) and the nucleic acid sequence HPP543B (375B) (SEQ ID NO:375) which encodes HPP543;

Figures 544A and 376B contain the amino acid sequence of *H. pylori* polypeptide HPP544 (544A) (SEQ ID NO:927) and the nucleic acid sequence HPP544B (376B) (SEQ ID NO:376) which encodes HPP544;

Figures 545A and 377B contain the amino acid sequence of *H. pylori* polypeptide HPP545 (545A) (SEQ ID NO:928) and the nucleic acid sequence HPP545B (377B) (SEQ ID NO:377) which encodes HPP545;

Figure 546A contains the amino acid sequence of *H. pylori* polypeptide HPP546 (546A) (SEQ ID NO:929);

Figures 547A and 378B contain the amino acid sequence of *H. pylori* polypeptide HPP547 (547A) (SEQ ID NO:930) and the nucleic acid sequence HPP547B (378B) (SEQ ID NO:378) which encodes HPP547;

Figure 548A contains the amino acid sequence of *H. pylori* polypeptide HPP548 (548A) (SEQ ID NO:931);

Figures 549A and 379B contain the amino acid sequence of *H. pylori* polypeptide HPP549 (549A) (SEQ ID NO:932) and the nucleic acid sequence HPP549B (379B) (SEQ ID NO:379) which encodes HPP549;

Figures 550A and 380B contain the amino acid sequence of *H. pylori* polypeptide HPP550 (550A) (SEQ ID NO:933) and the nucleic acid sequence HPP550B (380B) (SEQ ID NO:380) which encodes HPP550;

Figures 551A and 381B contain the amino acid sequence of *H. pylori* polypeptide HPP551 (551A) (SEQ ID NO:934) and the nucleic acid sequence HPP551B (381B) (SEQ ID NO:381) which encodes HPP551;

Figures 552A and 382B contain the amino acid sequence of *H. pylori* polypeptide HPP552 (552A) (SEQ ID NO:935) and the nucleic acid sequence HPP552B (382B) (SEQ ID NO:382) which encodes HPP552;

Figure 553A contains the amino acid sequence of *H. pylori* polypeptide HPP553 (553A) (SEQ ID NO:936);

Figure 554A contains the amino acid sequence of *H. pylori* polypeptide HPP554 (554A) (SEQ ID NO:937);

Figures 555A and 383B contain the amino acid sequence of *H. pylori* polypeptide HPP555 (555A) (SEQ ID NO:938) and the nucleic acid sequence HPP555B (383B) (SEQ ID NO:383) which encodes HPP555;

Figure 556A contains the amino acid sequence of *H. pylori* polypeptide HPP556 (556A) (SEQ ID NO:939);

Figure 557A contains the amino acid sequence of *H. pylori* polypeptide HPP557 (557A) (SEQ ID NO:940); and

Figure 558A contains the amino acid sequence of *H. pylori* polypeptide HPP558 (558A) (SEQ IS NO:941)--.

***In the Claims:***

202. **(Amended)** An isolated polypeptide comprising at least 10 consecutive amino acid residues of SEQ ID NO: ~~764~~809, wherein said polypeptide comprises at least one epitope recognized by a T cell receptor specific for the polypeptide set forth in SEQ ID NO:~~764~~809.

203.**(Amended)** An isolated polypeptide comprising at least 10 consecutive amino acid residues of SEQ ID NO: 764, wherein said polypeptide comprises at least one antigenic determinant of the polypeptide set forth in SEQ ID NO:~~764~~809.

212. **(Amended)** A composition comprising a fusion protein of claim 132 and a pharmaceutically acceptable carrier.

220. **(Amended)** An isolated polypeptide of any one of claims 202-203 comprising at least about 12 consecutive amino acid residues of SEQ ID NO: ~~764~~809.

221. **(Amended)** An isolated polypeptide of any one of claims 202-203 comprising at least about 16 consecutive amino acid residues of SEQ ID NO: ~~764~~809.